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25 September 2000

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DNA-5661F-1-SAN
The Operational Sustainability of Soviet Theater Forces, Sanitized Version, December 1979, UNCLASSIFIED.

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FOR ARDITH JARRETT
Chief, Technical Resource Center

DNA 5661F-1-SAN

THE OPERATIONAL SUSTAINABILITY OF SOVIET THEATER FORCES,

sanitized version

DM Corporation
915 Jones Branch Drive
cLean, Virginia 22102

December 1979

nal Report for Period 1 October 1978—30 November 1979

CONTRACT No. DNA 001-79-C-0040

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UNDER RDT&E RMSS CODE B325079464 V99QAXNL12331 H2590D.

Prepared for
Director
DEFENSE NUCLEAR AGENCY
Washington, D. C. 20305

84-53

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1 REPORT NUMBER: DNA 5661F-1— SAN
2. GOVT ACCESSION NO.
3. RECIPIENT'S CATALOG NUMBER

4 TITLE (and Subtitle): THE OPERATIONAL SUSTAINABILITY OF SOVIET THEATER FORCES, Sanitized Version
5. TYPE OF REPORT & PERIOD COVERED: Final Report for Period 1 Oct 78—30 Nov 79
6 PERFORMING ORG. REPORT NUMBER: BDM/W-79-597-TR

7 AUTHOR(s): F. C. Turner, W. R. Bell, L. F. DeMouche, G. L. Jacobson, F. V. Manzo, R. Milefsky, V. W. Skuby
8. CONTRACT OR GRANT NUMBER(s): DNA 001-79-C-0040

9 PERFORMING ORGANIZATION NAME AND ADDRESS: BDM Corporation, 7915 Jones Branch Drive, McLean, Virginia 22102
10 PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: Subtask V99QAXNL123-31

11 CONTROLLING OFFICE NAME AND ADDRESS: Director, Defense Nuclear Agency, Washington, D.C. 20305
12. REPORT DATE: 17 December 1979
13. NUMBER OF PAGES: 328

14 MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)
15. SECURITY CLASS (of this report)
15a. DECLASSIFICATION DOWNGRADING SCHEDULE: Review on 17 Dec 99

16. DISTRIBUTION STATEMENT (of this Report)

17 DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18 SUPPLEMENTARY NOTES

This work sponsored by the Defense Nuclear Agency under RDT&E RMSS Code B325079464 V99QAXNL12331 H2590D.

19 KEY WORDS (Continue on reverse side if necessary and identify by block number)

Soviet Army	Ammunition	Nuclear Logistics
Theater Warfare	POL	Air Base Support
Soviet Military Doctrine	Maintenance	Losses
Rear Services Support	Medical	
Norms	Movement	

20 ABSTRACT (Continue on reverse side if necessary and identify by block number)

This final report presents the results, at the collateral level, of the program to assess the Soviet/Pact capability to sustain a first echelon Front. It includes an examination of Soviet/Pact rear services operations; i.e., their ability to provide the requisite support on a timely basis. The results were interrelated with the results of an earlier assessment, "How to Hold Second Echelon Forces at Risk." Implications to NATO and targeting opportunities are included.

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

SUMMARY

The purpose of this assessment is to examine the sustainability of first echelon Armies and divisions. The assessment includes an analysis of doctrinal concepts and norms relating to resupply (ammunition and POL), movement support, maintenance, medical, nuclear logistics, and airbase support in the context of a 7-day Pact operation by a first echelon Front opposing NATO.

Potential NATO opportunities to delay, disrupt or destroy the Pact capability to sustain first echelon elements are interrelated with the conclusions of an earlier assessment, "How to Hold Second Echelon Forces at Risk." Successful actions against the capability of the first echelon to sustain momentum, if accomplished in concert with the delay, disruption, or destruction of second echelon forces, can cause significant degradation of a Soviet offensive.

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CHAPTER 1
INTRODUCTION

1.1 GENERAL

The Soviet concept for the conduct of offensive operations relies heavily on maintaining offensive momentum for successful attainment of time-phased objectives. Operational sustainability deals with the doctrine and practice for maintaining this momentum. The essence of this doctrine revolves around two interdependent principles:

(1) The echelonment of forces in depth which provides a swift reinforcement capability to sustain the offensive in either a short or long war.

(2) The echelonment of support forces utilizing forward delivery of stocks from higher to lower echelons and resorting to skip echelon delivery, if necessary.

The interdependency of these two principles hinges on the urgency of the requirement to reconstitute and replenish first echelon forces should the forces of subsequent echelons be delayed significantly or be destroyed. Previous and ongoing programs address the requirements for delaying, disrupting or destroying second echelon divisions and the interruption of the flow of supplies at higher levels of organization (Front and Army). Figure 1-1 illustrates the interaction of two of these programs (Hold at Risk and SHAPE/DNA LOGATAK) with this program (sustainability). As illustrated, the focus of this program emphasizes the interruption of the flow at the operational level of personnel and materiel resources necessary for reconstitution and refurbishment of first echelon divisions.

1.2 PURPOSE AND SCOPE

The purpose of this report is to provide the results of the analysis aimed at characterizing Soviet/Pact concepts relating to refurbishment of first echelon divisions and identifying support weaknesses for possible exploitation by NATO forces. The general approach taken developed

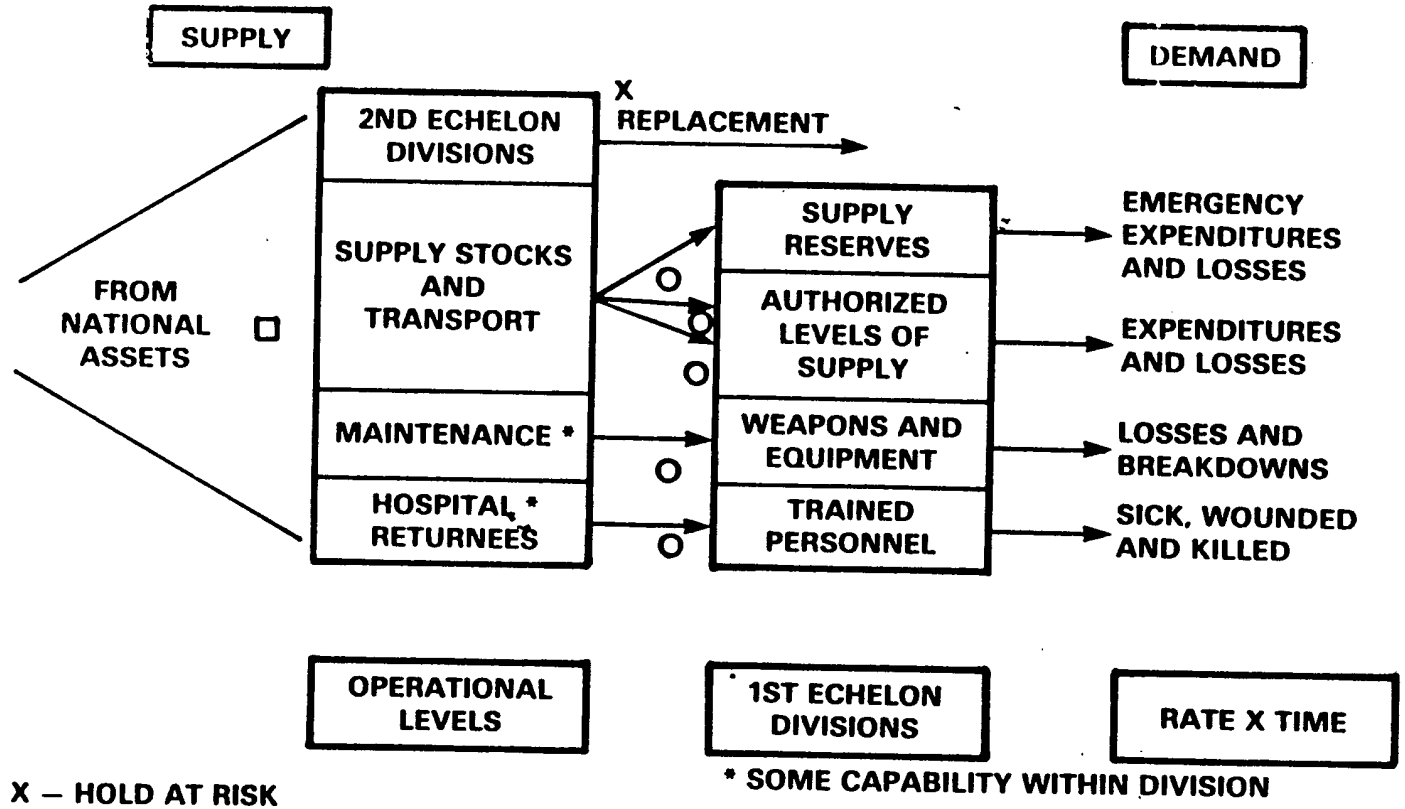

Figure 1-1. Approach to halting/reducing offensive momentum

the support requirements of a first echelon Front in a seven-day offensive operation with emphasis on ammunition and POL requirements of first echelon divisions. Requirements developed were based on Soviet doctrinal concepts and planning factors expressed in Soviet/Pact writings and documentation of the US/NATO intelligence community. Consistency validation of these requirements, accomplished by comparison with other sources, is contained in a separate volume.

The Soviet concept of materiel support places top priority on resupply of ammunition and POL to those forces attacking on the main axis receiving priority of support. Since divisions which possess an increased organic support capability are concerned mainly with internal distribution, the amounts of ammunition and POL required result in a significant demand for support from higher echelons (Army and Front). As a result, the investigation of capabilities focused on this demand; e.g., assess the Army and Front capabilities for meeting the demand and the practical consequences of implementing Soviet support concepts in the Central European environment.

The result of the above was identification of strengths and weaknesses. Again, validation was achieved through comparison with other sources of documentation. Weaknesses were examined to determine exploitability, and weapons requirements were developed. Strengths were examined to determine if they could be reduced or turned into weaknesses by NATO initiatives.

1.3 INTERDEPENDENCIES AND HIGH LEVERAGE TARGETS

The interdependency of force echelonment and materiel support in sustaining offensive momentum has been mentioned. A credible NATO capability to assess and affect both can have far-reaching effects, not only from a deterrent viewpoint but from the viewpoint of doctrine and training as well. The urgency of resupply, medical, or maintenance requirements is reduced if first echelon forces are replaced or reinforced by fresh second echelon forces. Similarly, delay or disruption of employment of second echelon forces is less effective if first echelon forces are resupplied at appropriate levels. Thus, the interplay between these two major elements

of sustainability establishes the framework for identification of time-dependent, high-leverage targets. Figures 1-2 through 1-4 portray the interrelationship of second echelon commitment times and the organic sustainability of first echelon divisions.

The nature of targets developed and acquisition capabilities guided the analysis of weapons implications. As shown in this report, the magnitude of the task requires addressing the use of both nuclear and nonnuclear weapons. The result provides insights into the formulation of an integrated battlefield interdiction plan.

1.4 APPROACH

As indicated above, Soviet/Pact concepts and norms were examined in the context of an offensive by a single Front during a 7-day period with a postulated rate of advance of 40 to 50 km per day after a 14-day mobilization. A four-day mobilization is also addressed. Chapter 2 describes the organization and composition of the Frontal force used for the analysis. The Front was based on Soviet and East German forces located in East Germany which constituted the force to be sustained.

Chapter 3 examines concepts relating to organization and control of the rear given the force to be sustained as described in Chapter 2.

Chapter 4 contains a detailed assessment of Pact concepts and norms relating to materiel and technical support within a Front. The chapter addresses the following specific areas:

(1) Conventional Ammunition
(2) POL
(3) Motor Transport and Movement Support
(4) Materiel Losses and Maintenance Support
(5) Personnel Losses and Medical Support
(6) Tactical Nuclear Logistic Support.

The Air Army is an integral part of a Front and aspects of air base support are addressed in Chapter 5.

Based on the assessments of topics addressed in Chapters 2 through 5, Chapter 6 describes and quantifies, in space and time, the

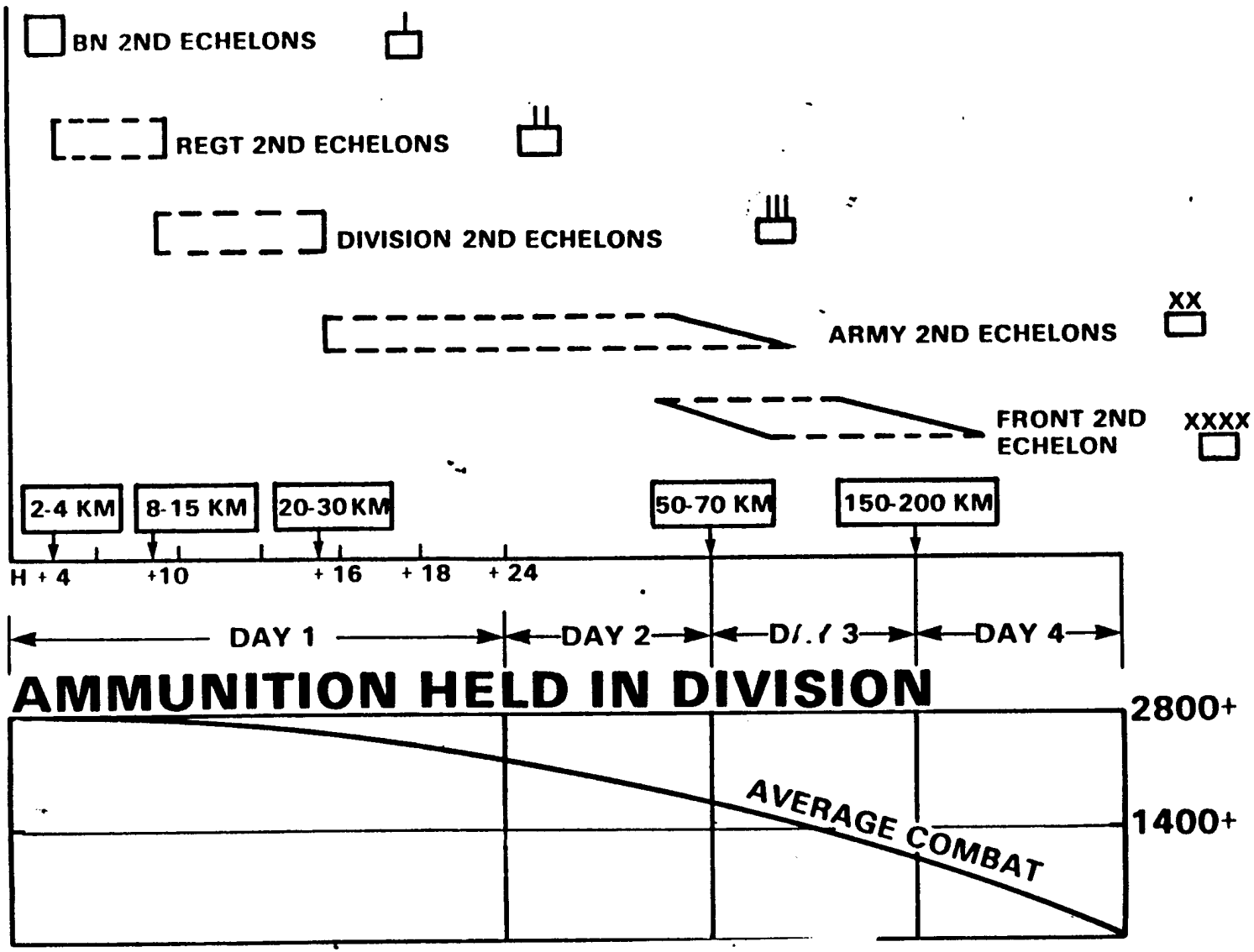

Figure 1-2. Interrelationship of second echelon commitment and ammunition holdings

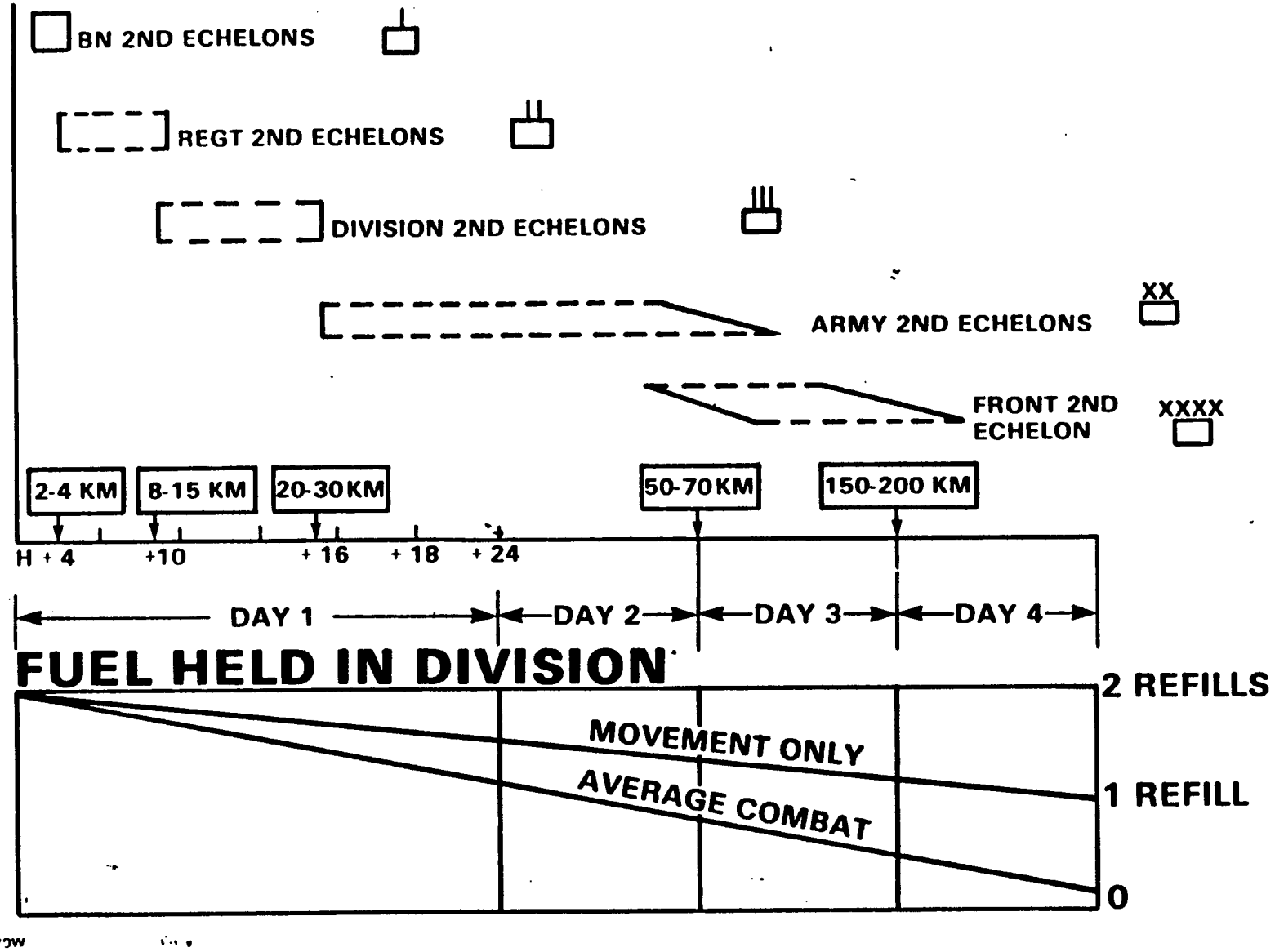

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Figure 1-3. Interrelationship of second echelon commitment and fuel holdings

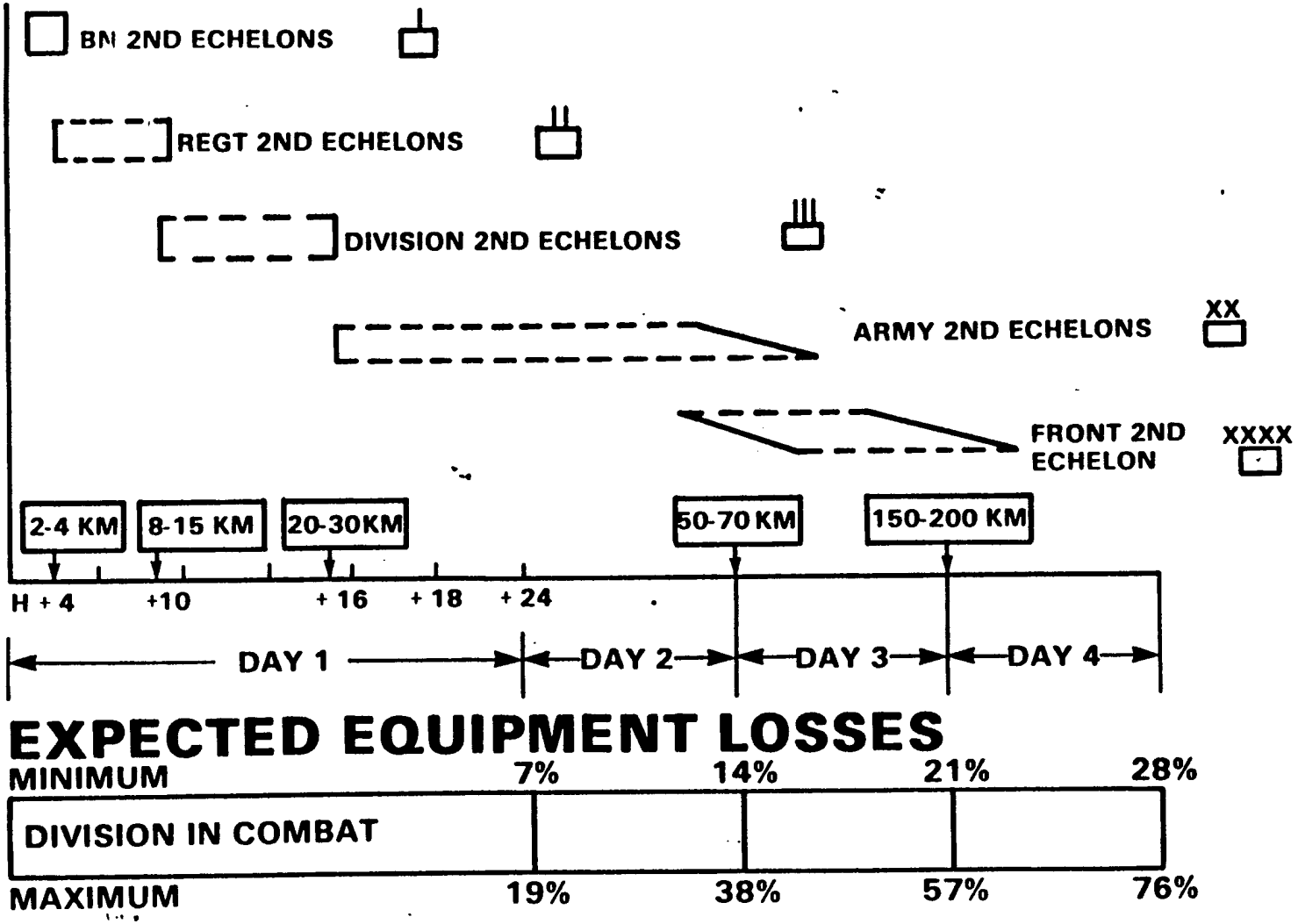

Figure 1-4. Interrelationship of second echelon commitment and equipment losses

nature of potential targets and their related time dependencies. These targets include resupply and evacuation convoys, rear control points and depots/supply bases. The requirements and capabilities to acquire these targets are then related to weapon requirements and capabilities. Finally, the implications of this assessment are related to other NATO opportunities to impede the offensive momentum of Pact forces; e.g., holding echeloned forces at risk and interdiction of barrier lines.

CHAPTER 2

A DESCRIPTION OF THE FORCE TO BE SUSTAINED IN THE CONTEXT OF A SCENARIO

2.1 GENERAL

The operational sustainability of Soviet/Pact Frontal forces within a theater of military operations (TVD) must be viewed in the context of overall Soviet/Pact military-economic theory. Organization, planning, concepts and procedures derive from and are influenced by a continually evolving and substantial body of military-economic theory. Military-economic preparation is basic to the theory and includes mobilization and production plans for industry. Extensive study of World War II experiences, coupled with detailed continuing research on general and particular problems, emphasizes:

(1) Relationship of strategy to the economy,

(2) Role of men and technology in war,

(3) Providing food for the country during wartime, and

(4) Methods of influencing the enemy's economy.

The focus by the mid-1960's--to make the USSR ready for nuclear or conventional war--led to a general conclusion that economic readiness for war resolved itself into gaining time so as to insure "that the Soviet Government was completely ready to expend the maximum effort at the very start of a nuclear war and, at the same time, have the potential capabilities for waging a prolonged war." 1/

By the late 1960's, the theory focused on "working out concrete measures and courses for preparing the economy for war and placing practical measures on a scientific foundation." 2/ Topics and factors to be elaborated included:

(1) Time factors and requirements,

(2) Military-economic potential,

(3) Optimal relationship between current production and strategic reserves,

(4) Role and place of timely stockpiling of reserves to support wartime requirements,

(5) Work force requirements and sources of recruitment,

(6) Most expedient system for mass training of qualified reservists, and

(7) Coordination of efforts of other socialist nations to strengthen and combine military-economic potential.

In his book, MILITARY STRATEGY, Marshal Sokolovskiy also emphasized the importance of the national economy 3/ (Figure 2-1).

A current (1978) appreciation of the Soviet perception of the strategic environment is shown at Figure 2-2. 4/ The role and place of Fronts and Armies within the overall environment also is shown.

2.2 FRONTAL CONCEPTS

Fronts do not exist in peacetime. They are activated, sized or tailored for participation in a specific strategic operation in a TVD. A Front may conduct this operation alone or in concert with other Fronts and forces to achieve the goals of a strategic operation. The goals of a strategic operation can be characterized as: 5/.

- Defeat of an enemy operational-strategic grouping,
- Capture of vital regions or installations.

The results of a strategic offensive operation should exert significant influence on the course of the war. The basic combat elements of a wartime Front (the Armies and the divisions assigned to them) exist in peacetime within the structure of the Military Districts and some Groups of Forces. At least the rudimentary framework of the combat service support force elements for the potential Front is also present in the Military District and Groups of Forces' peacetime structure.

There is no fixed Front organization. The number of Armies and separate divisions that might constitute the combat elements of a Front will vary widely and depend on the mission within the context of a strategic operation.

The combat divisions assigned to a Front are further assigned to the Armies or placed in a separate (or Front reserve) status depending on the concept of the operation and the actual situation as it develops. Front offensive operations are conceived as being conducted in at least two

Industry Must Prepare in Peace to Meet Anticipated Heavy Losses and to Provide New Units

Most Important Task (Duty) of Strategic Leadership is to Develop Thorough Well-Founded Calculations of Material Requirements of Armed Forces in Initial Phase of War

Cannot Count on Significant Expansion of Industry After War Starts--Therefore, Reserves Required are Created for at Least Initial Period and Productive Capacity is Prepared for Rapid Switch to Wartime Production Program

Peacetime Actions to Accelerate Industrial Mobilization--
- Standardize Military-Civilian Equipment
- Standardize Military Supplies Within Armed Forces
- Automate/Mechanize Production
- Ensure Availability of Power and Raw Materials
- Improve/Extend Transport Viability and Capacity
- Establish/Maintain Reliable Controls

Need for "Organic Relationship" Between Soviet Leadership and Armed Forces for "Most Efficient Utilization" of Economy and S&T Achievements; Mobilization and Proper Use of Armed Forces for Victory Possible Only With Such Relationship

Figure 2-1. Sustaining concepts depend on preparation of national economy

- Unexpected, sudden war still possible
- Requirements continue: to be prepared to meet general contingency of war with USA
- Other threats exist
- Strategic environment unstable
- Soviet military aim must insure relative advantage to serve political/military purposes
- Forces in being highly significant
- Theater operations (several concurrent possible) and main strategic strikes must be coordinated with need to limit damage to USSR
- Requirements/missions for "sustained combat readiness":
  - SRF, LRA, SLBMs - Destroy enemy means of nuclear attack; eliminate military bases; disrupt C^2; paralyze economy/transportation
  - NAVY - ASW and attack of SEALOC
  - PVO - Defeat air attack (include cruise missile) and reduce ballistic missile attack threat
  - FIELD FORCES - Eliminate enemy nuclear threat, (Fronts/Armies) troop formations, C^2 facilities

Figure 2-2. Current Soviet perception of strategic environment

phases; the task organization of the Front will probably change for each phase.

A large Front might have as many as seven Armies with up to 30 combat divisions. An Army in this Front might be assigned as many as six or seven divisions at some period during the Front operation. There might be as many as six separate divisions in a reserve status at some period during the operation.

The assignment of non-divisional elements to a Front will be made in the context of meeting the requirements of the most demanding task during the conduct of the operations; for example:

- Artillery: penetrating an extensive and well-developed fortified area,
- Engineers: overcoming extensive obstacles and minefields, with subsequent crossing of water obstacles.

These Front non-divisional elements will be assigned to, or put in support of, Armies for the several planned phases of the operation.

A Front structured for an offensive operation would have assigned varying numbers of the following formations:

- Surface-to-surface missile brigades,
- Artillery divisions/brigades,
- Multiple rocket launcher brigades/regiments,
- Antitank brigades/regiments,
- Surface-to-air missile brigades/regiments/battalions,
- Signal brigades/regiments,
- Combat engineer brigades/regiments,
- Ponton regiments,
- Chemical brigades/regiments.

As with the combat and combat support elements assigned to a Front when sizing it for an operation, the combat service support or rear service structure of a Front will be sized to meet the logistic support requirements of the Armies. It will be made up of:

- Transport, supply, evacuation, repair, medical units, and their facilities,

- Road, bridge, and railroad construction units to establish and maintain the lines of communications,
- Road and rail traffic control units to operate the lines of communications.

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In later chapters, the requirements for sustainability will be assessed in the context of these zones and interrelated with echeloning concepts.

Figure 2-6 depicts the alignment, depth and disposition of Fronts and Armies of the Western TVD as they might deploy for an offensive.

Figure 2-7 illustrates schematically the garrison locations of the Soviet/Pact division in East Germany, Poland, and Czechoslovakia prior to mobilization.

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CHAPTER 3
ORGANIZATION AND CONTROL OF THE REAR

3.1 GENERAL

Soviet writings recognize the importance of the rear in ensuring success in battle. Soviet concepts of combat readiness and effectiveness emphasize the need for uninterrupted supply and service support in fluid and fast-moving battle situations conditioned by the possible use of mass destruction weapons and frequent abrupt changes in the situation. In essence, the provision of supplies is based on an integrated network of supply installations operating within the context of prescribed supply levels. The system entails the integration of transport assets at all levels with priority to ammunition and fuel. Technical support in the form of materiel repair and medical service complements the basic supply requirements. Soviet concerns about and appreciation of operational sustainability appear frequently in their writings. The following extract from the Soviet Military Thought serves as an illustration:

> The speeds and continuity of attack depend very greatly on support with materiel means (ammunition, fuel, lubricants, rations, and means of protection from weapons of mass destruction). Broadly known is the negative influence on the speeds and continuity of conducting combat actions which is found in a shortage of ammuntion and fuel during operations of the past war. Now, the problem of rear supply is still more complicated. The increased capability of the defending troops to operate against the rear CHASTI (Units) and installations, communications, highway junctions, bridges, etc., hamper the carrying out of their mission. However, its disruption can lead to naught all the efforts of the attacking troops to achieve success in an operation in short periods of time. We must obviously resort now more frequently to increasing the mobile reserves of the attacking troops....1/

Marshal Sokolovskiy, in his book, Military Strategy, described strategic reserves as including both designated forces and materiel and services support. He emphasized that in peacetime those forces expected to be used/committed during the initial period/phase of combat are kept at full strength. Their supporting depots are also kept full with supplies. Other rear services units, Fronts, Fleets, and Armies, are formed, fleshed out, and deployed during mobilization. 2/

The all-inclusive role of the Soviet rear services is outlined by the current Chief of the Rear Services, Army General Kurkotkin, in his recent book, The Soviet Armed Forces Rear Services in the Great Patriotic War of 1941-1945, as follows:

> It is the Armed Forces Rear Services that receive all material allocated for the armed struggle or combat training from the national economy. They store them temporarily, and when necessary bring them to complete readiness for use, and deliver each unit of weaponry and combat equipment to the actual users, to the individual serviceman.

A current appreciation of rear services support extracted from the January 1979 edition of the Soviet Technology and Armament is provided below:

> The contemporary military rear services are capable of transporting all necessary supplies for the troops over any distance, under the most complex situations, and of ensuring the autonomy of action by PODRAZDELANIYE, CHASTI, and SOYEDINENIYE, as experience from various exercises has proven conclusively....The rear services, comprising as they do railroad, highway, automotive and pipeline troops, large and highly mechanized dumps, repair, evacuation, medical, and other CHASTI and installations, can handle any mission, of whatever size, involving rear support for Groups of Forces from all branches of the Armed Forces. 3/

Soviet concepts and practices must be viewed in terms of Soviet understanding and usage of the applicable words, phrases and terms. Specialized military dictionaries and encyclopedias can be of considerable

assistance. Appendix 1 provides a compendium of selected definitions of Soviet terms which aid in understanding Soviet concepts; e.g., unit of fire refill, and base section. The definitions have been grouped by related subject as an aid to the reader. Three definitions particularly applicable to an understanding of Soviet concepts are shown below:

Rear Services Support (TYLOVOYE OBESPECHENIYE). The complex of measures related to the organization of rear services; all types of routes and transport, materiel, technical and medical services, airfield engineering and technical support and chemical support of forces.

Materiel Requirements of the Armed Forces (MATERIAL'NYYE POTREBNOSTI VOORUZHENNYKH SIL): All services for combat to include transport, control and communication facilities, ammunition and fuel; logistical personnel and financial support to activate new units, replace combat losses, cover expenditures associated with the conduct of combat activities and meet current requirements for food and clothing.

Supply and Accounting Unit (RASCHETNO-SNABZHENCHESKAYA YEDINITSA): Unit of fire (BOYEVOY KOMPLEKT); fuel refill (ZAPRAVKA); daily ration; the set, kit or unit; charge, ammunition load; and the usual units of weight and volume.

Figure 3-1 provides a summary of sustainability concepts and related principles. Figure 3-2 interrelates English sustainability terms with corresponding Soviet terms. The Soviet terms are defined in Appendix 1.

Figures 3-3 through 3-6 portray graphically, at the unclassified level, the supply, repair and medical functions of the rear services within a Front. These functions, together with related norms and concepts, will be examined in detail in Chapter 4.

SOVIET/PACT CONCEPTS OF COMBAT READINESS AND EFFECTIVENESS EMPHASIZE THE NEED FOR UNINTERRUPTED SUPPLY AND SERVICE SUPPORT IN FLUID, FAST-MOVING BATTLE CONDITIONS WHICH MAY BE CHARACTERIZED BY USE OF MASS DESTRUCTION WEAPONS AND FREQUENT, ABRUPT SITUATION CHANGES

FLEXIBILITY, MOBILITY, MECHANIZATION, AUTOMATION, OPERATING STABILITY, CONTINUITY AND SURVIVABILITY IN:

SUPPLY SUPPORT

- MAINTAINING PRESCRIBED SUPPLY LEVELS
- ESTABLISHING INTEGRATED NETWORK OF SUPPLY BASES
- UNIFYING SUPPLY TRANSPORT
- PRIORITY TO – AMMO, FUEL, RATIONS

SERVICE SUPPORT

- HIGH LEVEL OF READINESS
- RAPID EFFECTIVE TREATMENT OF CASUALTIES
- MOBILE EQUIPMENT REPAIR

Figure 3-1. Sustainability concepts

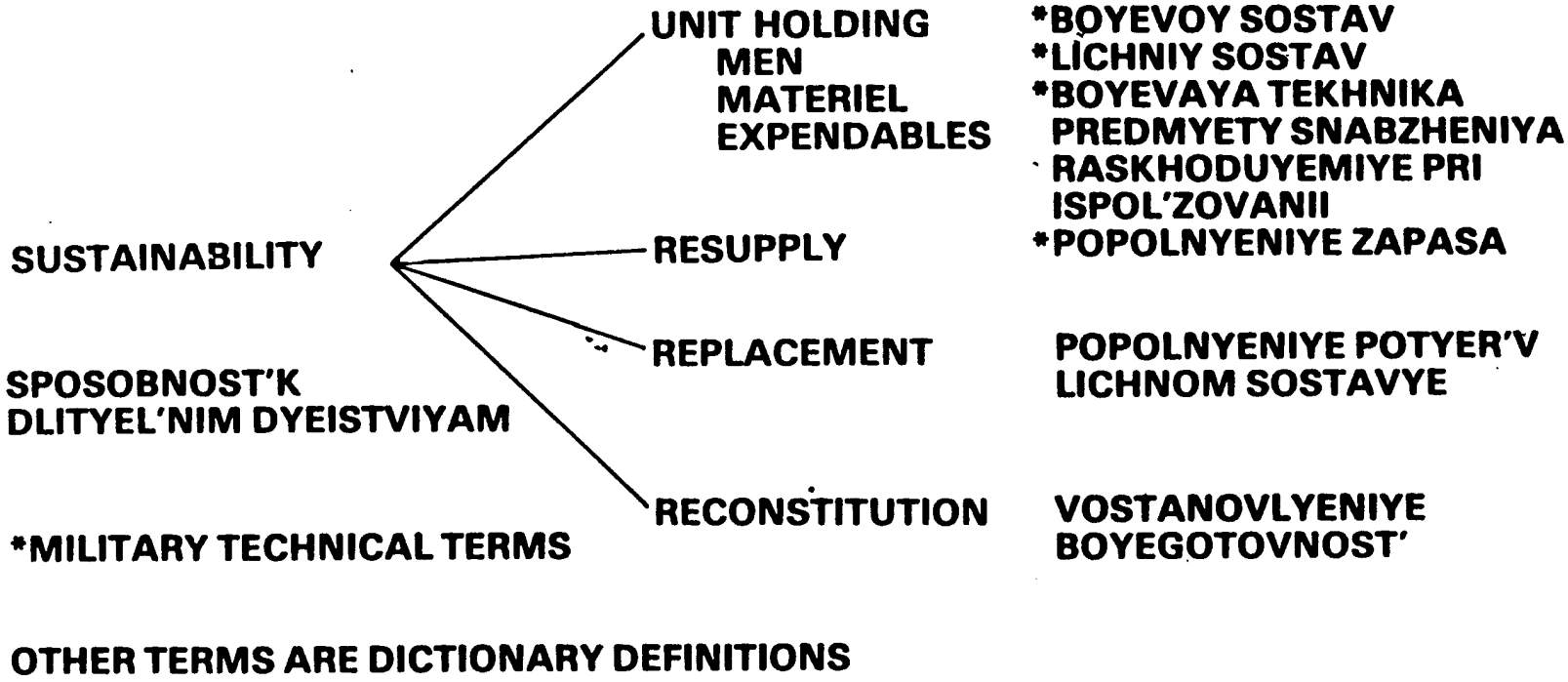

Figure 3-2. Elements of sustainability

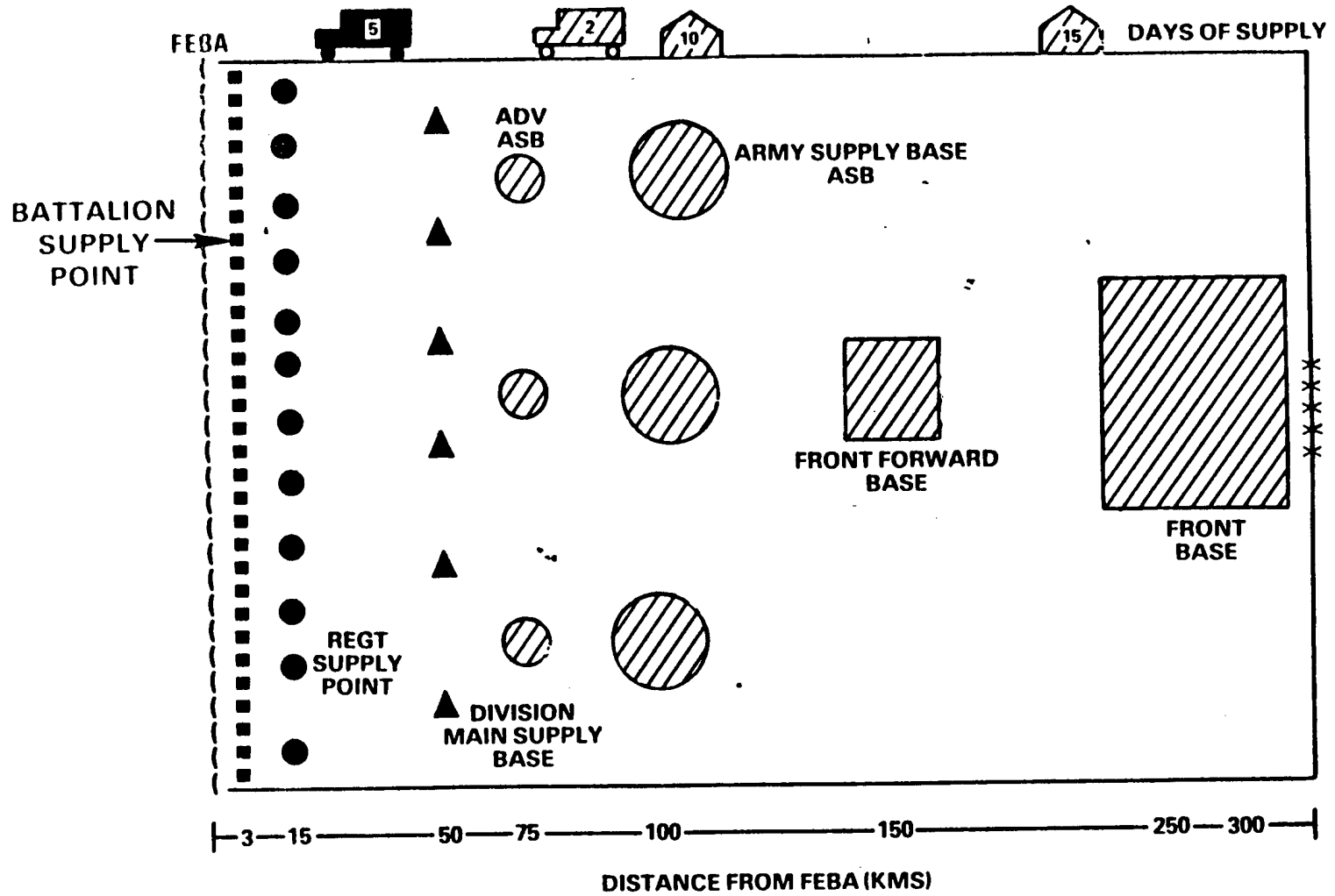

Figure 3-4. Tactical/operational service support components and supply levels in a "type" Front

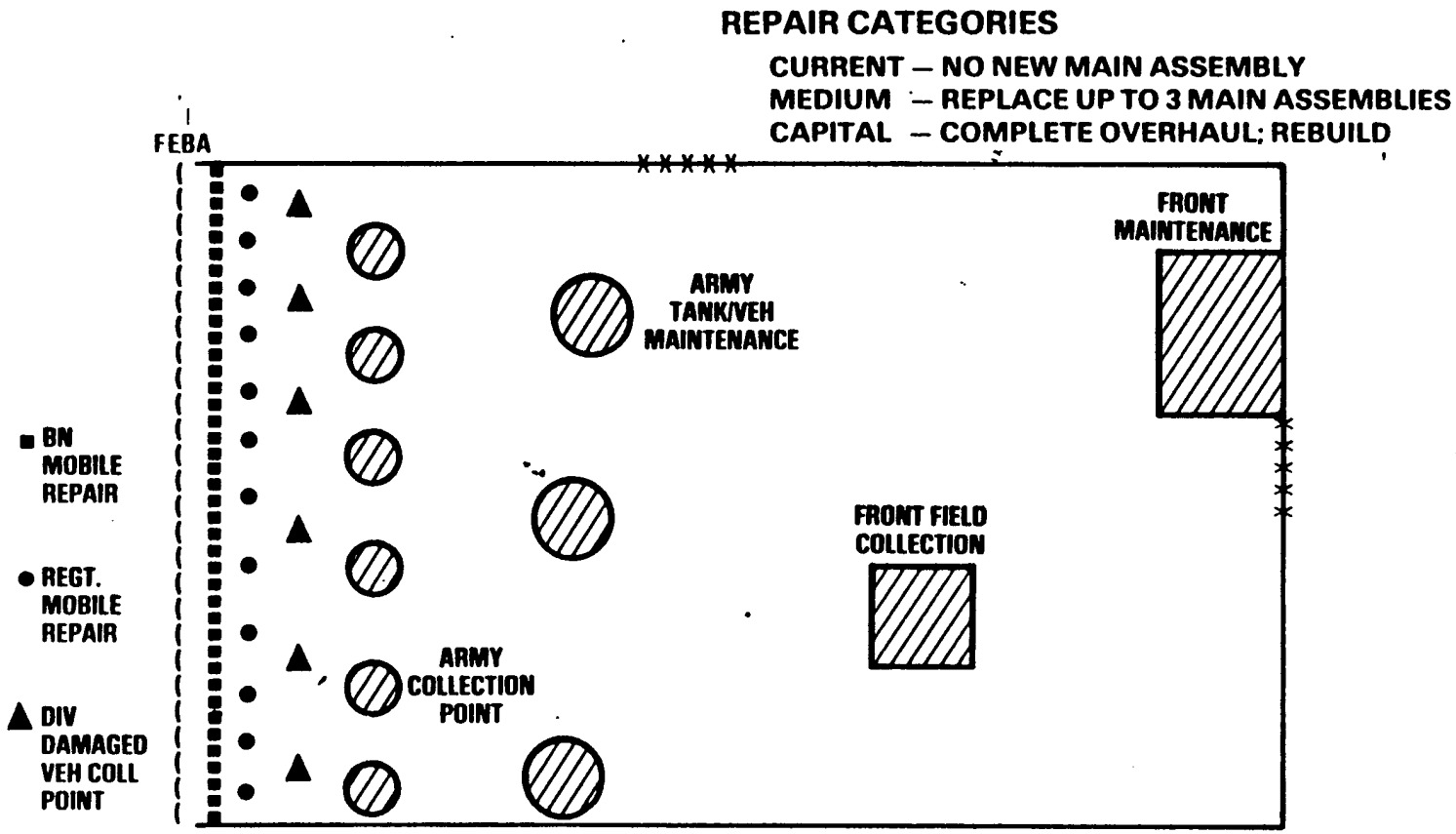

Figure 3-5. Repair and evacuation of tanks/APCs/vehicles

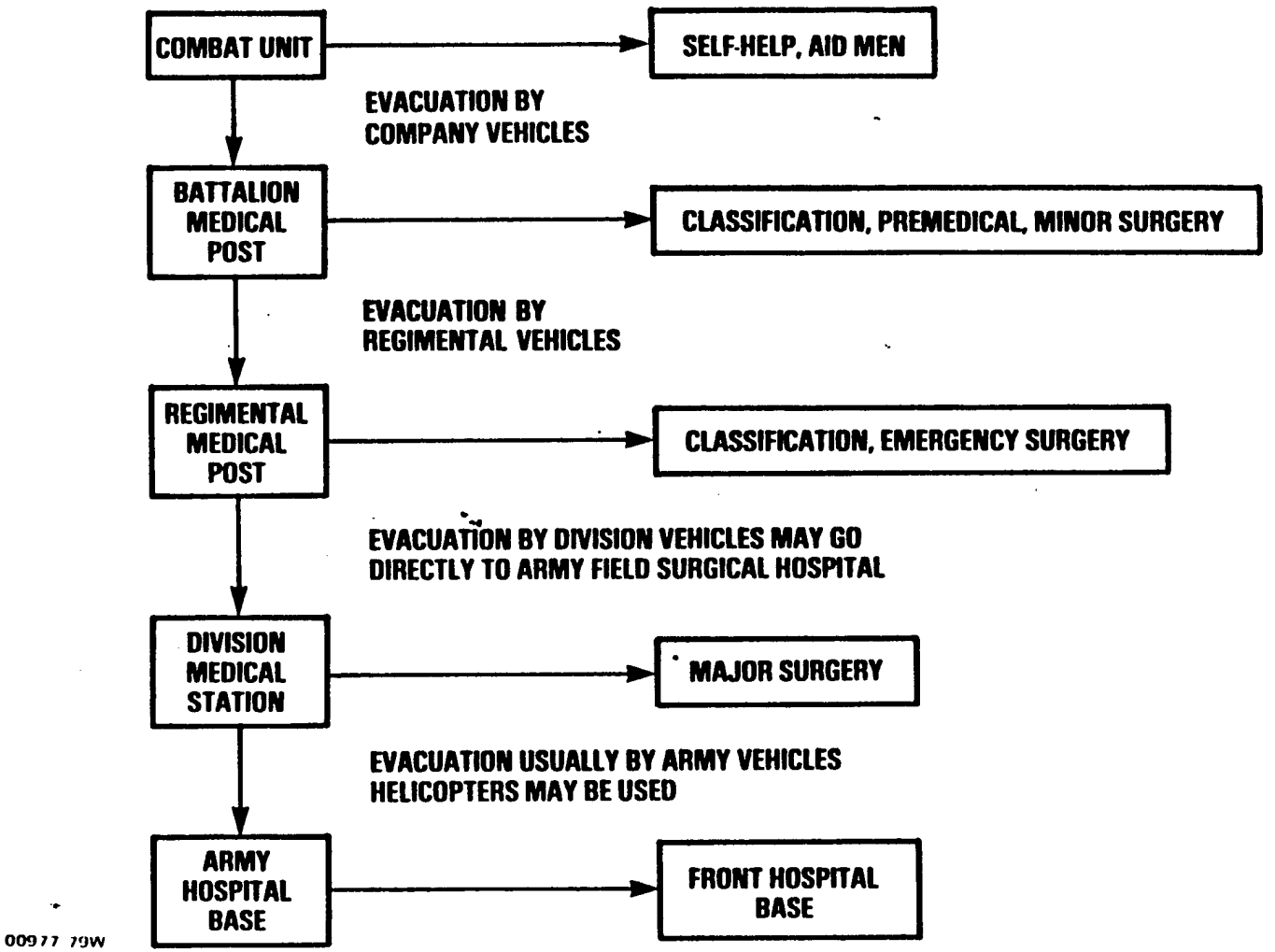

Figure 3-6. Medical evacuation and hospitalization

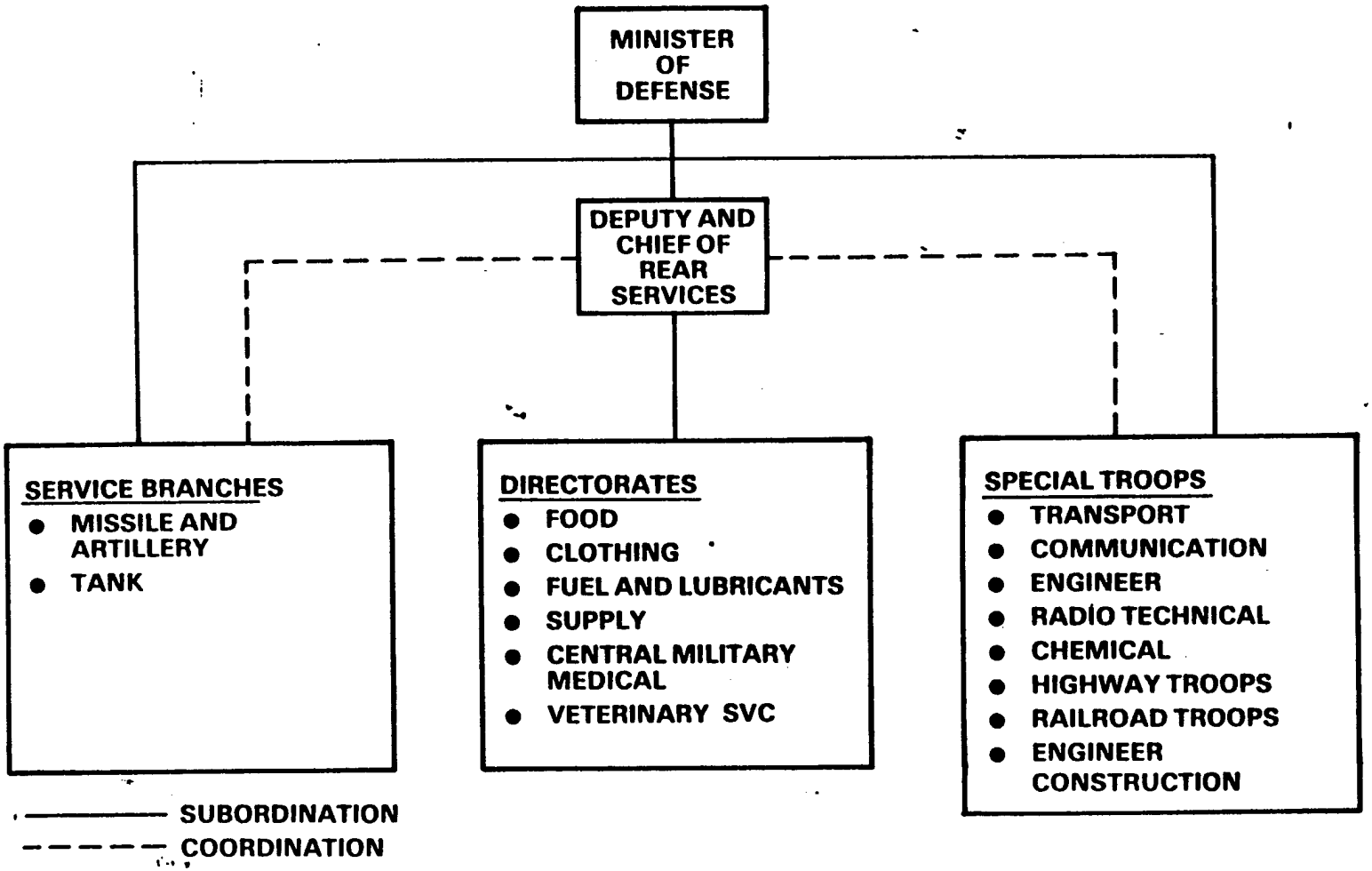

Figure 3-7. National-level logistic organization

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A description of the ground forces supply base deployments is shown at Figure 3-12.8/

An appreciation of the magnitude of rear services support within a Front can be derived from World War II examples. Figure 3-13 provides Soviet historical data based on the final campaign of the war.9/

3.3 CONTROL OF THE REAR

A system of Command posts exists at each level of command within a Front. These may include (depending on the level) main, forward, alternate, and airborne command posts. Control of the rear is vested in a rear control post (TYLOVOY PUNKT UPRAVLENIYA-(TPU)). According to the Soviet DICTIONARY of BASIC MILITARY TERMS the TPU is "a Control Post organized to direct the rear services of a major field force or strategic formation, formation, or unit." It should be noted that the term "control" vice "command" is used to describe the rear headquarters. However, under certain conditions, the rear could assume command in the event the main and/or alternate command post were eliminated.

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While the data is dated, the Soviet 1962 FIELD SERVICE REGULATIONS provided manning details of division and regimental command posts (Figure 3-14).11/

A simplified portrayal of the communications nets available for command, staff and support personnel is shown at Figure 3-15.

Editions of the Soviet Internal Service Regulations issued since World War II were reviewed to identify personnel with logistic responsibilities at the regimental and battalion levels. Figures 3-16 and 3-17 show that relatively insignificant changes have occurred since 1946.12/

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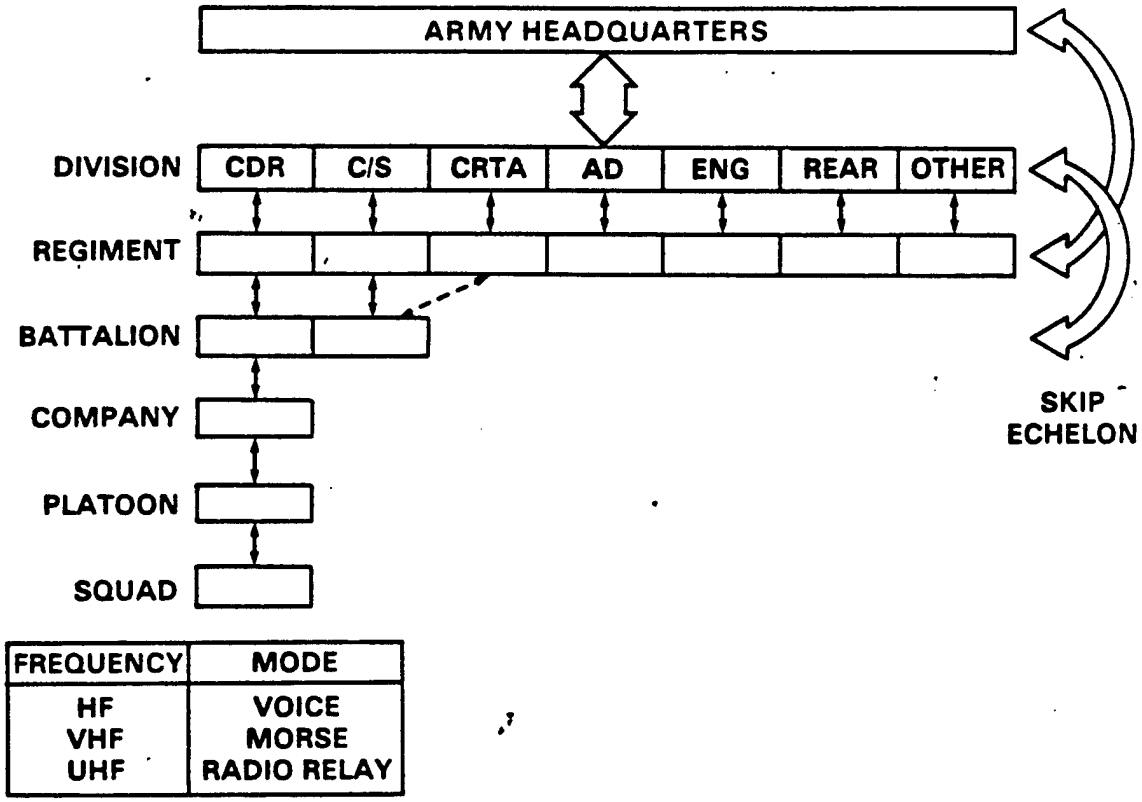

FREQUENCY	MODE
HF VHF UHF	VOICE MORSE RADIO RELAY

Figure 3-15. Division command/staff/support nets

1946	1963-73	1977
Regimental Commander	Regimental Commander	Regimental Commander
Deputy Regimental Commander (1st Deputy)	Deputy Regimental Commander (1st Deputy)	Deputy Regimental Commander (1st Deputy)
Deputy Regimental Commander for Political Affairs	Deputy Regimental Commander for Political Affairs	Deputy Regimental Commander for Political Affairs
Chief of Staff of Regiment (Deputy)	Chief of Staff of Regiment (Deputy)	Chief of Staff of Regiment (1st Deputy)
Deputy Commander of Regiment for Supply	Deputy Commander for Regiment for Rear Services	Deputy Commander of Regiment for Rear Services
Chief of Artillery of Regiment	Chief of Artillery of Regiment	Chief of Artillery of Regiment
Deputy Commander of Regiment for Technical Matters	Deputy Commander of Regiment for Technical Matters	Deputy Commander of Regiment for Technical Matters
Regimental Engineer	Regimental Engineer	Chief of Engineer Service of Regiment
Chief of Communications of Regiment	Chief of Communications of Regiment	Chief of Communications of Regiment
Chief of Chemical Service of Regiment	Chief of Chemical Service of Regiment	Chief of Chemical Service of Regiment
Senior Physician of Regiment	Senior Physician of Regiment	Chief of Medical Service of Regiment.
Chief of Artillery Supply of Regiment	Chief of Artillery Armament Service	Chief of Missile-Artillery Armament

Figure 3-16. Regimental-level personnel with logistic responsibilities (1946-Present)

1946	1963-73	1975-77
Battalion Commander	Battalion Commander	Battalion Commander
Deputy Battalion Commander	Deputy Battalion Commander	Deputy Battalion Commander
Deputy Battalion Commander for Political Affairs	Deputy Battalion Commander for Political Affairs	Deputy Battalion Commander for Political Affairs
Senior Battalion Adjutant (Chief of Staff of Battalion)	Chief of Staff of Battalion	Chief of Staff of Battalion
Senior Doctor's Assistant (Fel'dsher) (Medical Platoon Commander)	Senior Doctor's Assistant	Does not appear
Battalion Chemical Instructor	Battalion Chemical Instructor-Dosimetrist	Does not appear
-	Deputy Battalion Commander for Technical Matters	Deputy Battalion Commander for Technical Matters
-	(Senior Motor Transport Technician)	(Chief of Motor Transport of Battalion, Battalion Technician)

Figure 3-17. Battalion-level personnel with logistic responsibilities (1946-Present)

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A detailed assessment of Soviet/Pact planning norms and concepts within the context of a Front-level operation is contained in Chapter 4. The areas on supply (ammunition and POL), movement support, and maintenance and medical support are assessed in terms of the general principles shown above.

As stated earlier, current Soviet writings emphasize the lessons of World War II. Two schematics drawn from General Kurkotkin's recent book portray the rear services of the Fronts during the Stalingrad offensive (Figure 3-19) and the Berlin Operation (Figure 3-20). The figures are shown in the original Russian Cyrillic. Definitions of abbreviations and symbols are shown at Figure 3-21.19/

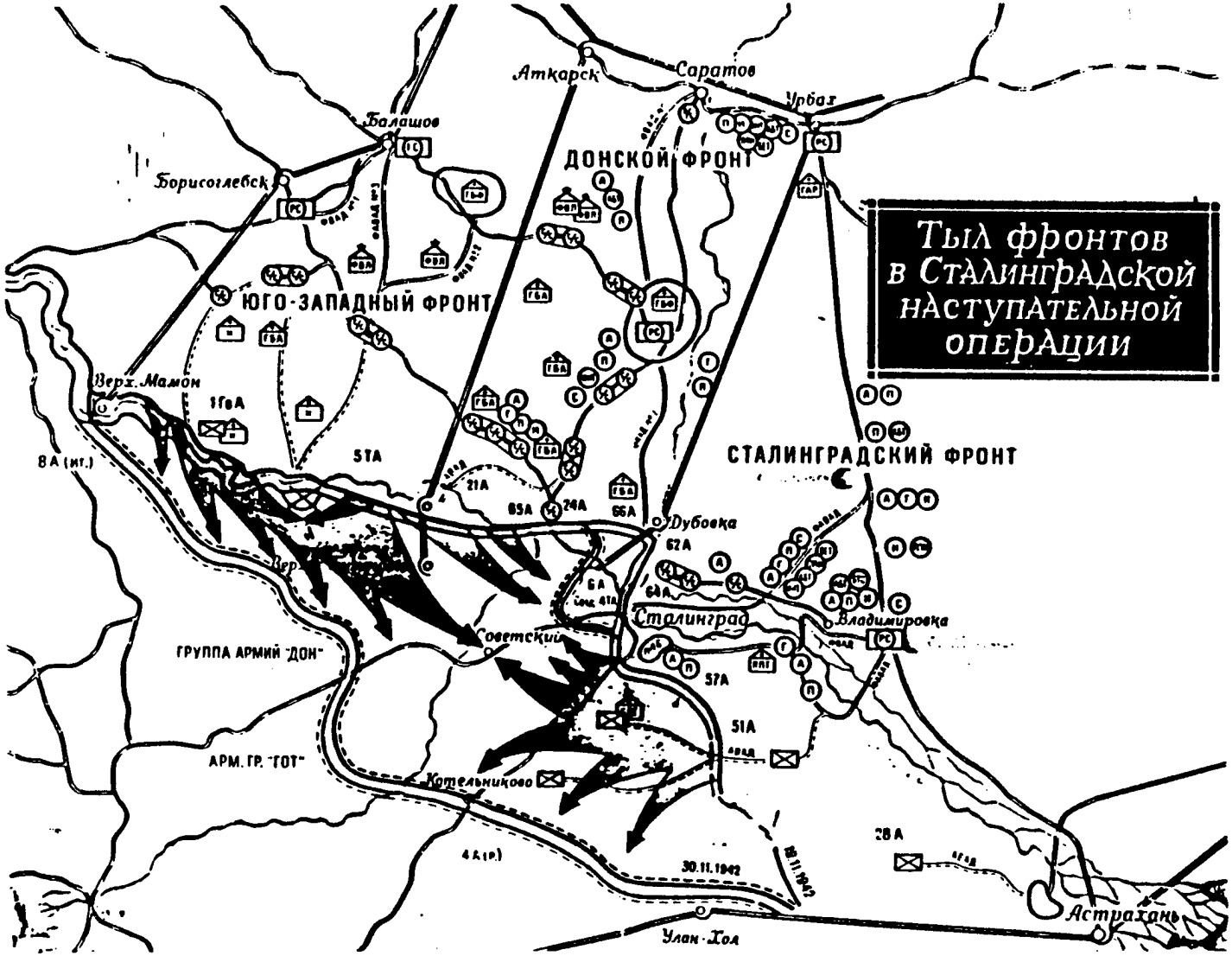


Figure 3-19. Rear services of the Fronts during the Stalingrad offensive

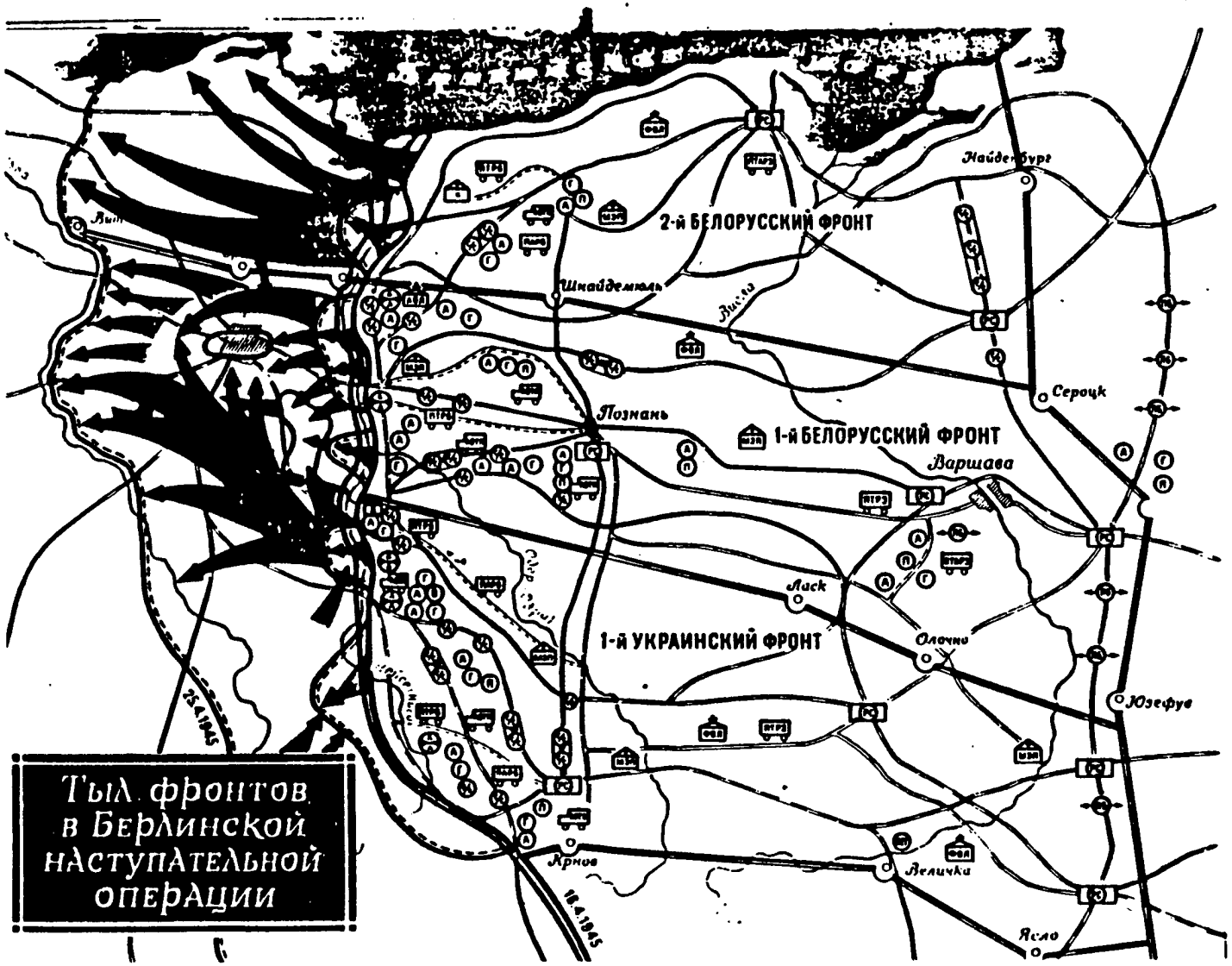


Figure 3-20. Rear services of the Fronts during the Berlin Operation

SYMBOL OR ACRONYM	ENGLISH	TRANSLITERATION	RUSSIAN
(А)	Munitions Depot	Ammunitsiya/ Ammunitsionyy artilleriyskiy sklad	Аммуниция/ Аммуниционный артиллерийский склад
(Г)	POL Depot	Goryuche-smazochnye materialy	Горюче-смазочные материалы
(И)	Engineer Depot	Inzhenernyy sklad	Инженерный склад
(П)	Rations Depot	Prodovolstvennyy sklad	Продовольственный склад
(С)	Medical Supply Depot	Sanitarnyy Sklad	Санитарный склад
	Collection Point for Damaged Vehicles A = wheeled T = tracked F = Front A = Army D = Division	Sbornyy punkt avarunnykh mashin A = avtomashiny T = tanki F = front A = Armiya D = Diviziya	Сборный пункт аварунных машин А = автомашины Т = танки Ф = фронт А = армия Д = дивизия
(АБТ)	Armored Equipment Depot	Avtobronetankovoe imushchestvo	Автобронетанковое имущество
(ИНТ)	Quartermaster	Intendant (-skiy)	Интендант /-ский/
(С/С)	Railhead	Stantsiya snabzheniya	Станция снабжения
(ВТС)	Military Technical Depot	Voenno-technicheskiy sklad	Военно-технический склад

Figure 3-21. Definitions of symbols/acronyms appearing on figures 3-19 and 3-20

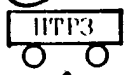
SYMBOL OR ACRONYM	ENGLISH	TRANSLITERATION	RUSSIAN
	Veterinary Depot	Veterinarnyy sklad	Ветеринарный склад
	Supply Distribution/ Regulating Station	Rasporyaditel'naya stantsiya	Распорядительная станция
	Mobile Wheeled Vehicle Repair Base	Podvizhnaya avto-remontnaya baza	Подвижная авто-ремонтная база
	Mobile Tracked Vehicle Repair Base (Tanks)	Podvizhnaya tanko-remontnaya baza	Подвижная танко-ремонтная база
	Motor Transport Regiment	Avtotransportnyy polk	Автотранспортный полк
	Army Field Depot (forward)	Polevaya armeyskaya baza	полевая армейская база
	Mobile Tank Repair Shop	Podvizhnyy tanko-remontnyy zavod	Подвижный танко-ремонтный завод
	Mobile Field (Surgical) Hospital/Infirmary	Polevoy podvizhnyy gospital	Полевой подвижный госпиталь
	Army Hospital Base	Gospitalnaya baza Armii	Госпитальная база Армия
	Front Hospital Base	Gospitalnaya baza Fronta	Госпитальная база фронта
	Mobile Field Surgical Hospital	Polevoy podvizhnyy gospital	Полевой подвижный госпиталь
	Medical Clearing Station	Mediko-evakuatsionyy punkt	Медико-эвакуационный пункт

Figure 3-21. Definitions of symbols/acronyms appearing on figures 3-19 and 3-20 (continued)

SYMBOL OR ACRONYM	ENGLISH	TRANSLITERATION	RUSSIAN
	Front Veterinary Hospital	Frontovoy veterinarnyy lazaret	Фронтовой ветеринарный лазарет
ФВАД	Front Military Highway (Front Military Road/MSR)	Frontovaya voenno-avtomobil'naya doroga	Фронтовая военно-автомобильная дорога
АВАД	Army Military Highway (no. 1)(Army Military Road/MSR)	Armeyskaya voenno-avtomobil'naya doroga	Армейская военно-автомобильная дорога
ФАВАД	Front and Army Military Highway	Frontovaya i armeyskaya avtomobil'naya doroga	Фронтовая и армейская автомобильная дорога
8А /Ит./	Eighth Army (Italian)		
Армейская группа "ДОН"	Army Group "Don"		
Армейская группа "Гот"	Army Group "Hoth"		
4А	Fourth Army (Romanian)		
28А	28th Army		
51А	51st Army		
57А	57th Army		
64А	64th Army		
62А	62nd Army		
66А	66th Army		
24А	24th Army		
65А	65th Army		
21А	21st Army		
5ТА	5th Tank Army		
1 Гв А	1st Guards Army		

Figure 3-21. Definitions of symbols/acronyms appearing on figures 3-19 and 3-20 (continued)

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CHAPTER 4

MATERIEL AND TECHNICAL SUPPORT - NORMS AND CONCEPTS

4.1 GENERAL

The purpose of this chapter is to assess in detail the primary factors which bear on the operational sustainability of a Frontal formation. Norms and concepts which implement the theory and doctrine of rear services support described in Chapter 3 will be emphasized.

The assessment will be conducted using the forces and scenario described in Chapter 2; i.e, the Front formed principally by the five Armies with 20 divisions in GSFG and 2 East German Army/Corps entities with six divisions. Sensitivities relating to a seven-day period with a projected rate of advance of 40 to 50 Km per day will be determined. Vulnerabilities and NATO targeting opportunities will be examined in Chapter 6.

Air-related support is discussed in Chapter 5. The principal elements of ground force-related materiel and technical support are addressed in separate sections of this chapter as shown below:

4.2 Ammunition concepts and norms

4.3 POL concepts and norms

4.4 Motor transport and movement support

4.5 Materiel losses and related maintenance support

4.6 Personnel losses and related medical support

4.7 Nuclear logistics

4.2 AMMUNITION CONCEPTS AND NORMS

4.2.1 Ammunition Concepts and Norms

Organizational and logistic data used in this assessment are based on the DIA Soviet Ground Forces Organizational Guide, Ground Forces Organizational Guide - East Europe, and the Warsaw Pact Logistics Guide. 1,2,3/ These documents will be referred to as the Soviet Organizational Guide, the East European Organizational Guide, and the Logistics Guide.

Pages 77 through 80
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The usual composition of a unit of fire is:

1 to 6 percent smoke and illumination

1 to 6 percent armor-piercing and concrete-piercing

88 to 98 percent fragmentation/high explosive

The methodology of fuze allocation (delay, point-detonating, proximity, etc.) is currently unknown. Artillery units are supplied with specific types and amounts of ammunition for each operation, measured in fractions of units of fire. This supply may be delivered to the firing units or (especially in the case of preparatory fires) stocked at predesignated firing positions.

Pages 82 through 85 were deleted

4.2.3 Ammunition Stockage and Movement

The artillery commander (Chief of Rocket Troops and Artillery) at each echelon, together with the Chief of the Rear, is responsible for the requisition, transportation, storage, and distribution of ammunition. Subordinate units' ammunition expenditures and requirements are consolidated at each echelon of command and reported to the next higher echelon on a daily basis. The impetus for delivery is from the top down, with supplies either being carried directly to subordinate units/depots or transloaded onto their vehicles as the situation allows.

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At all echelons the replenishment of ammunition stocks will begin on D-Day. Delivery units may skip echelons; Front vehicles might deliver directly to a divisional artillery unit, bypassing Army; or Army vehicles might deliver directly to a regimental howitzer battalion, bypassing division. This is a measure of flexibility permitting more rapid delivery in urgent circumstances. Deliveries are made in response to daily ammunition status reports and requisitions from subordinate units, with the intent that each unit should be able to begin each day's operations with full ammunition allowances on hand.

Forcing a slowdown in this critical Front's operations by interdicting forward movement of Front-level ammunition stocks could further disarrange Soviet war plans. The transportation network from the western USSR via Poland to the Central Region could have its capability reduced for moving reinforcing units forward if it were required for supplementary ammunition movements to the Front. The commitment of the second operational echelon could thus be delayed or reduced in strength in order that the operations of the first echelon Front might be properly sustained.

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4.3 POL - CONCEPTS AND NORMS

4.3.1 General

Whereas food, fodder, and ammunition were the largest part of total materiel expenditures in World War II, in present-day operations fuel plays the largest part.1/

This section, as well as sections 4.3.2 and 4.3.3, are based on data derived from Warsaw Pact Logistics Guide, Soviet Ground Forces Organizational Guide; and Ground Force Organizational Guide - East Europe, which will be referred to as the Logistics Guide, Soviet Organizational Guide and East European Organizational Guide, respectively. 2,3,4/

Pages 97 through 106 were deleted

Non-divisional units are variously assigned throughout the Front's area of operations. For this scenario they are assumed to be in the same daily combat status as the divisions.

4.3.4 Refueling Operations and Equipment

In the words of Army General S. K. Kurkotkin, Chief of the Rear Services and Deputy Minister of Defense, in a 1977 article on the Soviet Armed Forces Rear Services:

> Qualitative changes have taken place in the fuel supply service too. It has received an adequate number of highly productive field, main, and storehouse pipelines, new metal and rubberized fabric tanks, pumping stations and motorized pumps, mechanized fuel and lubricant tank trucks, special refuelers for centralized aircraft refueling, mobile repair shops, mobile laboratories, sets of equipment for resupplying ships without docking, and other equipment. 5/

In the August 1978 edition of the Soviet Military Review, General Kurkotkin further discussed the extent of refueling capability modernization as follows:

> The fuel and lubricant service has been equipped with new technical facilities which have helped increase its output capacity in the main elements by 50-100 percent. At present, practically the whole of the motor vehicle fleet for refueling and transportation of fuel has been renewed. New field refueling facilities are now in wide use.

Over the past five years the Soviet military press has carried a plethora of articles in Rear and Supply (TYL I SNABZHENIYIE) on refueling and the new equipment. 6/ There has also been special emphasis

on refueling exercises to reduce refueling time and improve efficiency. Soviet authors have contrasted this newly acquired refueling capability with that in 1969 and have stated that the operational efficiency of the fuel supply service has increased considerably and that the time consumed refueling a MR battalion (with the PZP-8) has been "reduced twofold".

The Field Refueling Point-PZP

The refueling operation is based on the "field refueling point/station" (POLEVOY ZAPRAVOCHNYY PUNKT-PZP). The Soviets developed in the early 1970's and introduced into service commencing in 1974 a number of these field refueling points (PZP) with capabilities to simultaneously refuel various numbers of combat, administrative, and fuel transport vehicles with different types of fuel. Sometimes the pumping equipment is carried on the vehicle; other times it (and possibly a generator) is mounted on an attached trailer. The various field refueling units include the PZP-8, PZP-10, PZP-10A, PZP-12, PZP-20, and PZP-24 (the number indicating how many vehicles can be refueled simultaneously).

New Refueling Equipment

- PZP (POLEVOY ZAPRAVOCHNYY PUNKT) (field refueling point/station)
  PZP-8 (on vehicle) used for motorized rifle Bn
  PZP-10 (for tank company) ATS-8.5-255B (8,500 liters)
  PZP-10A (on trailer) ATS-8.5-255B (8,500 liters)
  PZP-12 (with trailer or other truck for pumping equipment and generator)
  PZP-20 (with trailer or other truck for pumping equipment and generator)
  PZP-24 (with trailer or other truck for pumping equipment and generator)
- MPG (motorized pumping unit)
  MPG-50 (pumps fuel from truck to storage tank or storage tank to truck)
  MPG-60 (tank to truck)

- PSG (new pumping unit) (6 standpipes)
  PSG-75
  PSG-160
- MR-4, R-4, and MR-25 (rubberized cloth) storage tanks (can be put in trucks) (used to fill fuel trucks or drain/store fuel)
- PLG (mobile fuel laboratories)
  PLG-2M

Refueling Vehicles

- POL trucks on ZIL-131, URAL-375, KRAZ-255B, and MAZ-500A chassis.

ATS-Z-4.4-131	with 4400 liters of fuel
ATS-5.5-375	with 5500 liters of fuel
ATS-8-500A	with 8000 liters of fuel
ATS-8.5-255B	with 8500 liters of fuel

Note: Tank trucks have self-priming pumps with 500 l.p.m capacity and 3-meter and 9-meter hoses. Trailers with a pump and electric power plant are often towed behind the tank trucks.

- POL Trailer

PTS-4	with 4000 liters of fuel
PTS-67	with 6700 liters of fuel

Note: A field refueling station (PZP) consisting of a KRAZ-255B POL truck and PTS-67 POL trailer can deliver 15,200 liters of fuel through a PZP-10 to the 10 tanks of a tank company in a simultaneous refueling operation. (Two such PZPs can provide a "refill" for a tank battalion).

- Bulk Refueling Trucks

TZA-7.5-500A on a MAZ-500A chassis with a capacity of 7500 liters (can pump 860 l.p.m through two hoses) - used for issuance of fuel to refueling units.

TZ-30 semitrailer and cab with a capacity of 30,000 liters (can pump 1,000 l.p.m through two hoses) - used for issuance of fuel to refueling units and aircraft.

The older POL trucks such as the ATZ-3-157 (3,000 liters), ATS-M-4-157 (4,000 liters), and ATZ-4.3-131 (4,300 liters) generally had at the most four hoses. The Soviets added 4 or 8 distribution hoses to POL vehicles since 1974 with the PZP-8 and the PZP-12, respectively. The PZP-12 can thus perform group refueling of wheeled vehicles, pumping 220 liters to each of 12 motor vehicles simultaneously. Tracked vehicles normally refuel twice a day and wheeled vehicles once. POL trucks keep the fuel in liquid state in cold weather by heating with exhaust gases and thermal insulation.

The POL trucks (AT) and bulk fuel supply vehicles (TZ) are made of aluminum and non-rusting steel. These are used in conjunction with metal and rubberized cloth tanks, pipelines, motorized pumping units, and mobile fuel laboratories.

Cargo trucks can also carry empty rubberized fabric tanks for temporary storage with a capacity (when filled) of 450 to 750 cubic meters (instead of the heavier steel storage tanks which occupy and hold 25 cubic meters each).

(U) The Soviets have made a major effort to upgrade the capability for mass refueling of vehicles. The introduction of the new PZP system has resulted in a reduced loss of fuel in the refueling operation as well as a reduced expenditure of crew time for refueling. The capability for mass issue of fuel has resulted in increased sustainability of movement and reduced vulnerability when units must stop for refueling.

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4.4 MOTOR TRANSPORT AND MOVEMENT SUPPORT

4.4.1 General

Soviet doctrine emphasizes the importance of sustaining rapid movement of combat forces. Motor transport and movement support are considered to be essential elements that play a major role in support of the maneuver force. Support of high-speed offensives, characterized by high rates of advance over great distances on several axes, requires the effective movement of personnel, supplies, and equipment.

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Motor transport units are the responsibility of the Chief, Central Motor Vehicle Tractor Directorate under the MOD. He is responsible for administering and providing these units as well as maintaining all non-combat vehicles. See Figure 4-14.7/

4.4.2.4 Motor Transport Automotive Equipment. Vehicles in motor transport units are versatile and well adapted for off-road movement. Such features as locking differentials, central tire inflation systems, low-profile tires, and power steering and brakes all serve to enhance the mobility of these vehicles.

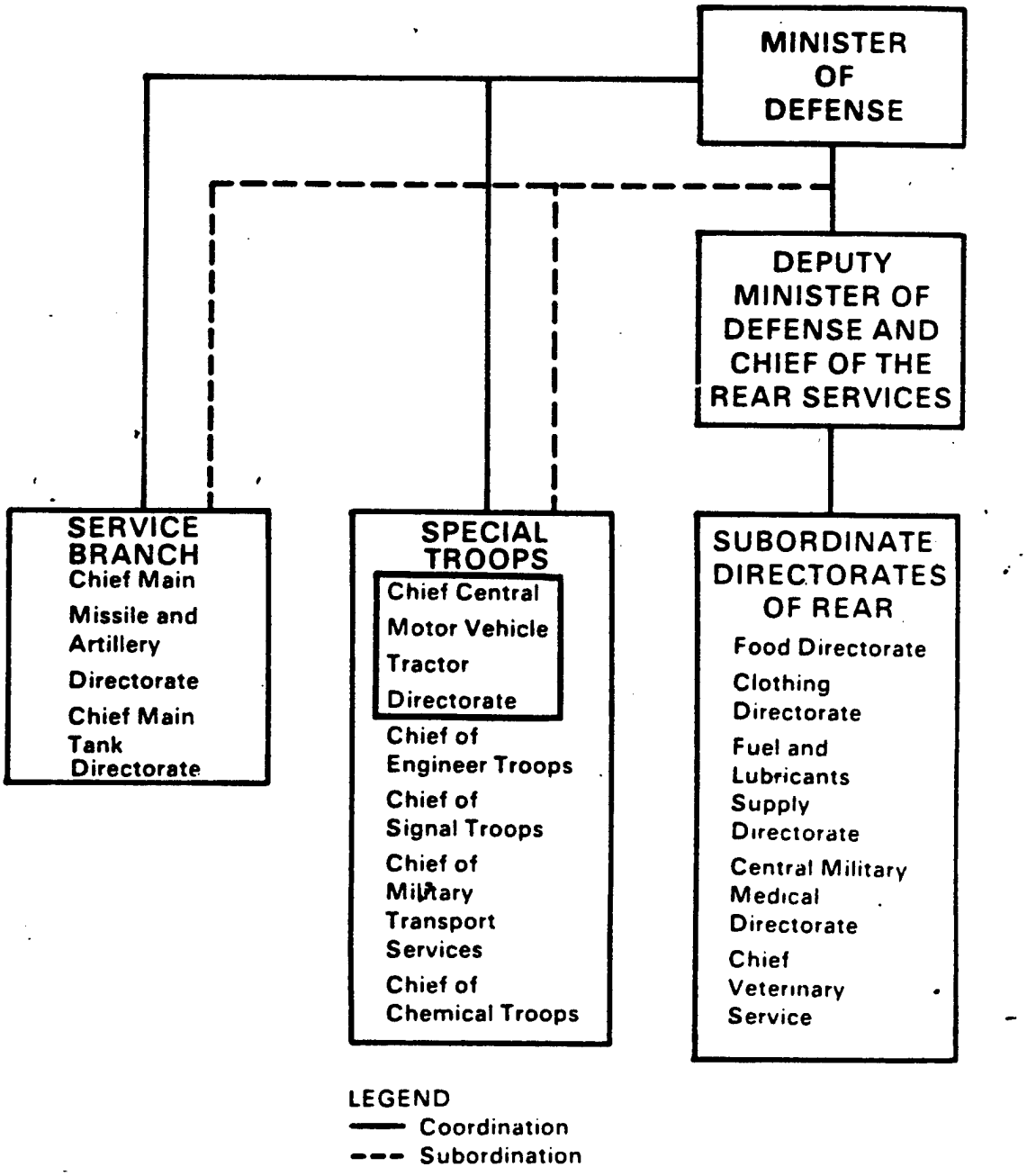

Figure 4-14. Ground forces national-level logistical organization

The major characteristics of most of the vehicles described in this section are depicted in Figure 4-15.8/

4.4.2.5 Logistics Support. The Soviets are believed to have a sufficient number of logistics vehicles in GSFG to meet anticipated transport demands in event of war. Organic truck transport in GSFG is considered adequate and large civilian truck fleets (AVTOKOLONNAS) are available in reserve, if required.

TYPE	PAYLOAD (Tons)Road/ Cross Country	TRAILER LOAD (Tons)	RANGE (KM)	USE
ZIL 131	5/3.5	6	500	General Purpose (GP)
GAZ 66	2/2	2	700	GP at Bn and Regt
URAL 375	7.5/4.5	8/5	600	GP at Division
URAL 377	8/7.5	10.5	600	GP Army & Front
KRAZ 214/225	7.5	>20	600	Widely Used
MAZ 535	6	50	600	Used by Missile Troops and at Front & Army Level

NOTES:

1. ZIL and URAL series POL trucks are most common.
2. Rubber fabric POL tanks carried by cargo trucks are becoming a common means of fuel transportation.
3. Not listed are older series ZIL and GAZ vehicles or extra-large Soviet load-carriers, such as the KRAZ 255B and KAMAZ 5320

Figure 4-15. Major Soviet logistics vehicles

While it is true that the Soviets have achieved a high degree of logistics preparedness for a war against NATO, given ample logistics stocks and motor transport vehicles to move these stocks, they recognize that the key to successful military operations will depend largely on motor transport to provide timely and efficient delivery of materials to the forward units.

The locations of logistics supply bases are as far forward as possible to ensure the timely delivery of supplies. Supply depots at Front and Army levels are maintained near railroad lines. Divisions maintain mobile supply bases as far forward as possible. At division level, depots are located in the field at accessible road junctions, but most supplies are kept in motor transport vehicles. At regimental level, the same principles apply, with regimental mobile supply points established as far forward as possible in convenient locations. At battalion level, supplies are maintained by the Battalion Supply Point and transported on organic vehicles.

Supplies are moved using the forward delivery system from higher to lower echelons. Figure 4-16 provides one example of delivery arrangements in the Soviet logistics system.9/ Note the heavy emphasis on road transport in the tactical rear and its presence at each of the echelons described. (Not shown are air [except nuclear transport means] and water transportation means used in the resupply chain.)

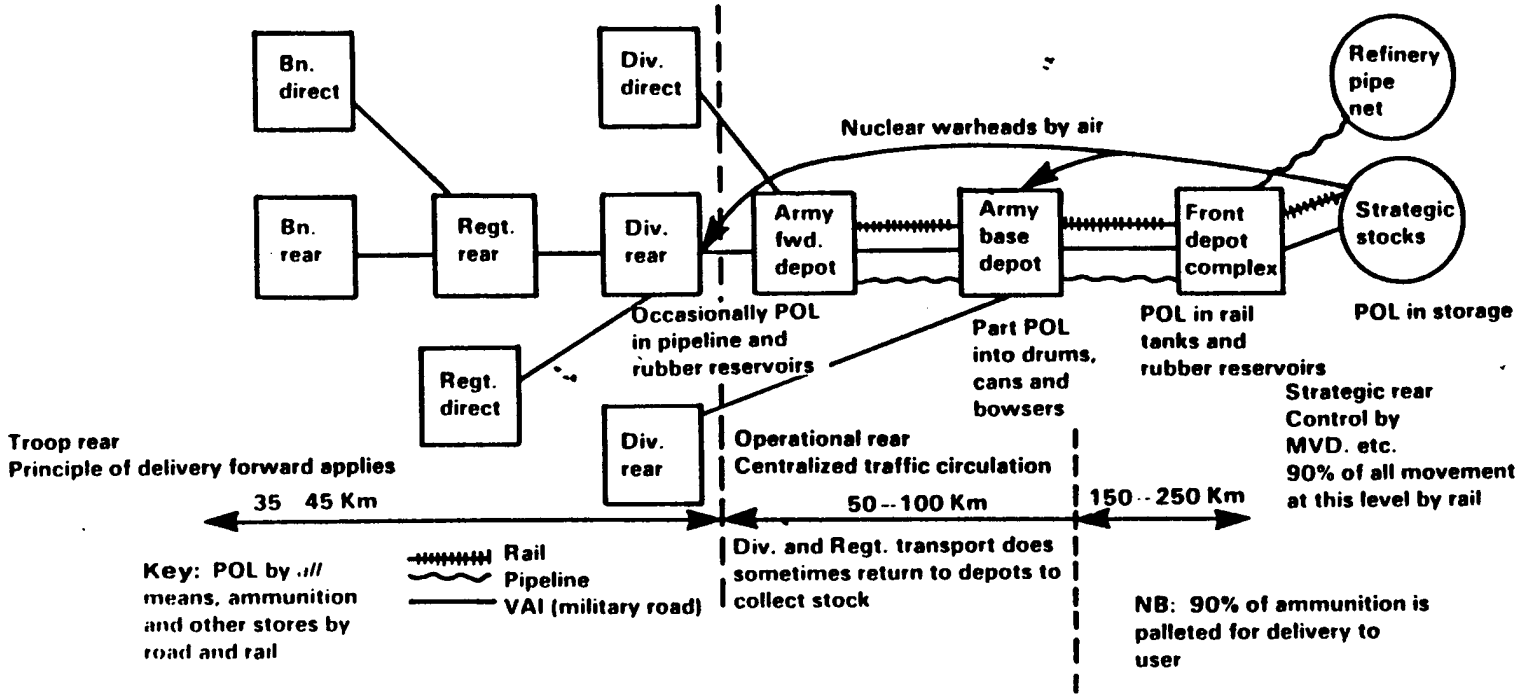

Figure 4-16. Forward delivery of Soviet logistics

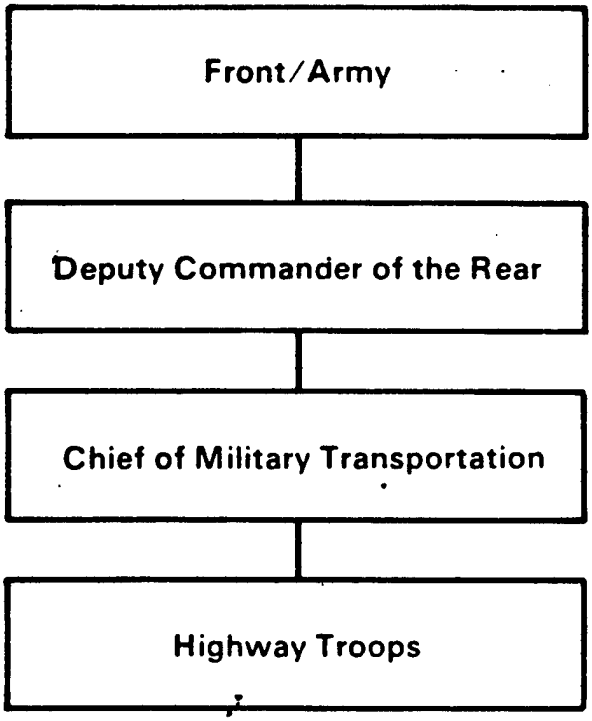

Figure 4-17. Subordination of Front/Army highway troops

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At division and below, each headquarters has a commandant responsible for supervising a team of traffic regulators and coordinating the use of the unit's rear area transportation network. Tactical-level traffic is regulated using the organization depicted in Figure 4-19.13/

At division level and below, road maintenance is performed by organic engineer elements, while movement is controlled by traffic regulators.

4.4.3.3 Highway Support Considerations. The 1968 invasion of Czechoslovakia demonstrated the requirement for the Soviet military to recognize shortcomings in their movement support operations. The large numbers of combat and logistics support vehicles involved in the invasion overtaxed the existing road system to such a degree that serious delays were encountered which were not anticipated in advance. Drawing from this experience, the Soviets learned that:

- Roads become quickly congested with both military and civilian traffic, the latter attempting to evacuate the war zone.
- Heavy military traffic will seriously degrade the conditions of any road.
- Priority over road space in favor of combat forces results in delay of resupply convoys.
- Direction of movement is almost totally reliant on traffic regulation and road signs. The latter, when moved by civilians, can cause serious movement problems.

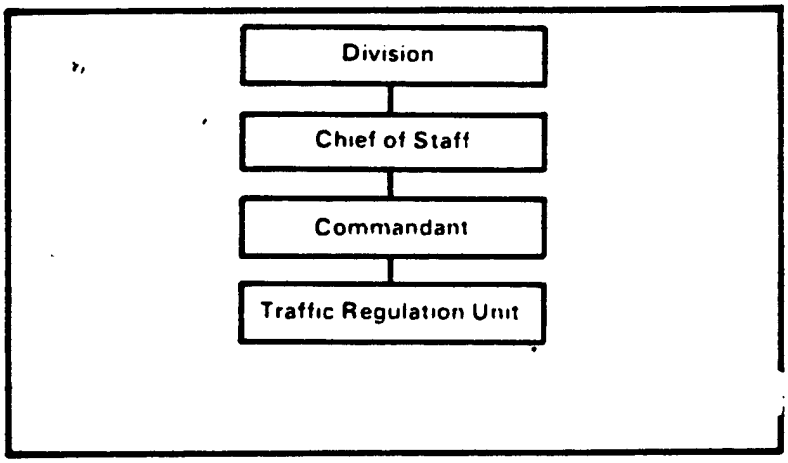

Figure 4-19. Tactical-level traffic regulation

Not all the type bridges have been covered in the treatment of engineer support. Nor is there mention of the wide range of amphibious vehicles in the Soviet combat inventory. Amphibious capabilities are engineered in most of the armored APC-type vehicles to include the new (122 mm) SP artillery and two mobile surface-to-air missile (SAM) systems. All medium tanks are capable of snorkeling across water barriers up to 5.5 meters deep. Also, in the present Soviet inventory, there exist tank- and truck-launched bridges capable of spanning roughly 60 to 80 percent of the water obstacles in Northern and Central Europe. In sum, although the Soviets have made huge investments in providing their ground forces superb river crossing equipment, they continue to improve, both in quality and in quantity, the present inventory of engineer unit equipment at both divisional and non-divisional levels.

Soviet engineer units, both divisional and non-divisional, play an important role in movement support of the Soviet ground forces. Apparently, the structure of these units, at Front and Army, demands that most of the engineer resources be utilized almost exclusively for the movement support of river crossing operations, while the highway troops at

Pages 137 through 141 were deleted

These norms for each type of route play a major role in establishing basic road capacity, which may be defined as follows:

> The basic road capacity is the theoretical maximum number of vehicles of a specified type that can pass over one lane in one direction on a two-lane road during a 24-hour period, with consideration given to speed, interval, and surface type only.21/

NOTE:

Appropriate road movement tables for use in conjunction with road capacity formulas may be found in the DIA LOGISTICS GUIDE which is the principle source used in this portion of the report.

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[redacted]

4.4.4 [redacted] Assessment

[redacted] On the surface, from the data provided, the Soviets are capable of sustaining an attack against NATO using organic motor transport and movement support techniques.

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[redacted]

[redacted]

Given the "high state of readiness" of the combat forces and supporting rear elements, there is some doubt that the Soviets have the wherewithal to successfully sustain a ground battle in Central Europe without having to circumvent a number of serious limitations that exist in peacetime. This could impact on their combat effectiveness during either a short war or a war of prolonged duration.

[redacted]

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[redacted]

[redacted]

4.5 [redacted] MATERIEL LOSSES AND MAINTENANCE CONCEPTS

4.5.1 [redacted] General

[redacted] A major function of rear service support is the recovery, evacuation, repair and routine maintenance of major combat equipment. Field maintenance and repair units are provided for tracked vehicles, wheeled vehicles, artillery (ordnance), engineer, signal and chemical equipment. Since vehicle repairs comprise the overwhelming majority of maintenance and repair requirements, they will be emphasized.

[redacted] Recovery and repair of damaged vehicles play a crucial role in the sustainability of Soviet/Pact forces. Soviet literature notes that, during the Second World War, the combat capability of the Red Army was extended considerably as a consequence of the repair and maintenance capabilities of the rear services (Figure 4-26). Tanks were damaged in large numbers throughout World War II; overall, 75 to 80 percent of tank losses were restorable, 80 to 90 percent of them within two days. The amount of repair work during World War II very often doubled the number of tanks participating in combat operations. Some tanks were repaired as many as three times and returned to the front lines.1/

[redacted] Around this combat experience the Soviet/Pact Armies have designed their current vehicle recovery and maintenance/repair system. They have also made adequate changes to accommodate the modern combat environment which may employ weapons of mass destruction. This section examines functions, organization, norms and strengths/weaknesses associated with damaged vehicle evacuation, repair and maintenance within a Front. (See Appendix 1 for further explanation of maintenance/supply terminology.)

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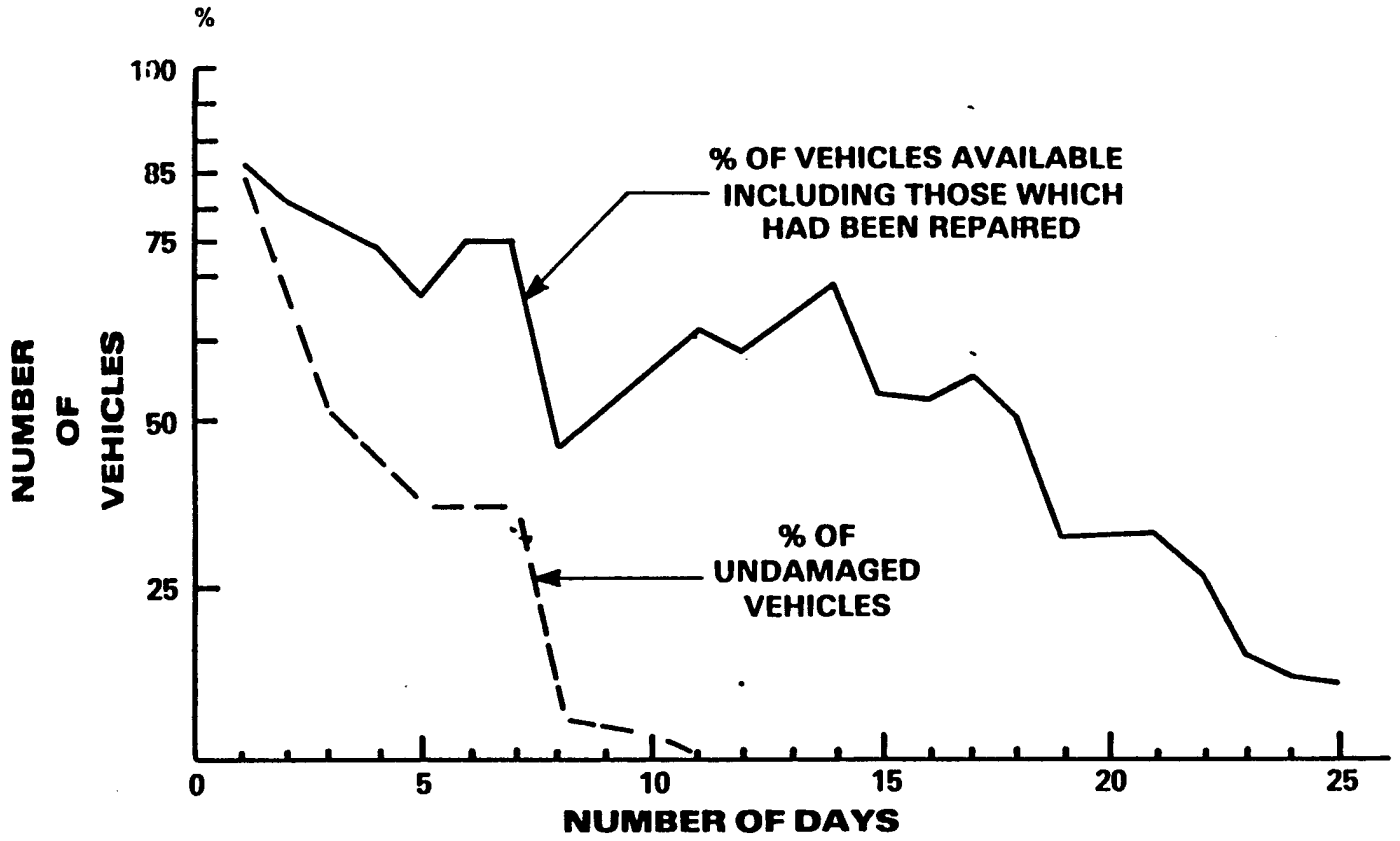

SOURCE: A. KH. BABYZHAHIAN, TANKS AND TANK TROOPS, p.248

(EXAMPLE: AUGUST 1943, RESTORATION OF DAMAGED TANKS, 1ST AND 4TH GUARDS TANK ARMIES)

[redacted]

Figure 4-26. Soviet vehicle combat capability extended as a consequence of repair and recovery services

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[redacted]

4.5.3 [redacted] Organization of Maintenance and Repair Services

[redacted] Like the other rear services elements, the maintenance and repair services are subordinate to their own structural system of rear services organization but, because of their supporting role, coordinate their activities with combat elements. This coordination/subordination

[redacted]

[redacted]

interaction is depicted on the schematic organization diagram (Figure 4-27). At the Front level, tank (tracked vehicle) and motor vehicle (wheeled vehicle) directorates separately organize and direct repair and maintenance regiments. At the Army level, however, a single deputy commander for technical matters (DCTM) operates both tank and motor vehicle maintenance and repair regiments. From the division down to the battalion level, the respective deputy commanders for technical matters direct combined tank and motor vehicle repair units. The nominal DCTM in the company, who also has other combat duties, is in charge of the drivers/mechanics who operate vehicles and who are also responsible for minor routine maintenance work.

Soviet/Pact military vehicle maintenance and repair services are physically organized on a tiered basis. The higher the unit level, the further rearward the unit services are deployed and the more complex the level of services rendered. The aim of this system is to minimize the number of damaged vehicles evacuated to the rear by servicing lesser damaged vehicles as close to the front lines as possible. The Soviets anticipate the bulk of their vehicles will sustain light damage in combat. Thus, Soviet doctrine emphasizes short distances between the repair facilities and the combat zone in order to facilitate the rapid return of most damaged vehicles to service. Figure 4-28 lists in greater detail the major functions, organizational structure, and other features of the vehicle recovery, maintenance, and repair services at various levels.

The evacuation and the repair of damaged vehicles, although closely related organizationally, are distinct functions. Particularly at higher unit levels (division and above) evacuation and repair units function separately but in tandem with one another. Evacuation elements generally establish DVCPs while maintenance and repair elements, following close behind evacuation elements, service vehicles brought to the DVCPs.3/ At lower levels, evacuation and repair units, for the most part, do not function separately as described at higher unit levels.

Conceptually, it should be kept in mind that evacuation units are concerned with the rearward flow of vehicles to DVCPs located throughout the Front zone and the rear. The DVCPs are established in a forward

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direction in accordance with the rates of advance of combat units. Similarly, repair and maintenance units are concerned with continuous forward deployment to keep abreast with advancing combat units. As shown in Figure 4-29, repair facilities may or may not be directly attached to a DVCP. One repair unit may serve several DVCPs. Further toward the rear, semi-permanent repair facilities may be in the area of large DVCPs.

[redacted] Generally within the Front, the majority of repair workshops are mobile, while permanent repair shops performing most medium and some major repairs are located far in the rear. Naturally, as doctrine stresses, established civilian facilities are to be utilized whenever possible by any level repair and maintenance units within the Front. During the Second World War, between 1942 and 1945, the Red Army in Europe made use of mobile workshops about 85 percent of the time and permanent repair shops about 15 percent of the time.

4.5.4 [redacted] Norms Related to Vehicle Losses

[redacted] Warsaw Pact literature describes three types of losses to vehicles: temporary, non-terminal, and irretrievable.4/ Temporary losses, which are sometimes referred to as "current" repairs, generally require routine or light repairs. Some current repairs can be done right on the battlefield by mobile battalion supply and maintenance platoons and even by the vehicle drivers themselves. Duties consist of carburetor adjustments, oil change, spark plug and other mechanical adjustments and preventive maintenance tasks. Routine repairs are performed up to the Army level.

[redacted] Non-terminal losses fall into two repair categories: medium and capital (major). Medium repairs are done chiefly at the Army and Front levels which, because of their size, supply access, and equipment, are best suited to perform them. Medium repairs constitute operations requiring more than one maintenance/replacement operation, or between two to five reassemblies or replacement tasks, including engines, transmissions and differentials. Capital repairs are made on vehicles which have sustained considerable damage and require substantial technical work. They are also done on vehicles which are recalled for modernization and reoutfitting. The majority of capital repairs are performed outside the area of the Front

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operation, very often back in the homeland in large military repair/assembly plants. Damaged vehicles are evacuated by rail and water, when transport distances are great.

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4.5.5 [redacted] Evacuation and Repair Norms

[redacted] During combat operations, the ability of evacuation/recovery crews to rapidly perform their duties and to set up damaged vehicle collection points will be largely contingent upon the variety and extent of damage. As indicated in the tabular data, different combat environments and changing combat activities will put varying strains on evacuation requirements. Ideally, as many vehicles as possible shall be serviced right on the battlefield by the vehicle drivers themselves who have training in minor routine repairs.

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4.5.6 [redacted] Ordnance Repair

[redacted] There is not a large body of literature on the operations of artillery/ordnance repair facilities. Like vehicles, ordnance damage is assessed light, medium, and heavy, and repairs are classified as routine (small), medium (general), and capital (major). Organizationally, the chief of artillery at the regiment level and above is responsible for maintaining small arms as well as large artillery pieces. Regiments have two or three ordnance repairmen located at regimental ammunition depots. They do work chiefly on small arms and automatic weapons. Repairmen in artillery regiments perform low-level repairs on larger artillery pieces as well as on small arms.

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4.6 [redacted] PERSONNEL LOSSES AND MEDICAL CONCEPTS

4.6.1 [redacted] General

[redacted] This section includes: 1) the organization of the military-medical services of the Warsaw Pact nations; 2) related Soviet estimates of personnel losses in a Front in a NATO-Warsaw Pact conflict; and 3) an assessment of the Front's ability to handle casualties.

[redacted] In conformity with general rear services doctrine, the medical support system maintains the rates of advance of the supported military units. Likewise, medical services are spartan and quickly made operable at the grass roots level. Equipment at lower unit levels is confined to bare essentials and emphasis is put on rapid evacuation to better medical facilities operated at higher unit levels further to the rear. Doctrine places emphasis on the use of local means of transport and facilities, wherever possible, to evacuate casualties in lower level medical units. Communications links are essential to the efficient operation of this support element.

[redacted] Theoretically, the Soviet and Warsaw Pact medical services are structured to accommodate mass casualties and still allow the ground forces to maintain their offensive momentum. However, the extent of casualties and the duration of casualty recovery vary greatly according to the type of operation conducted. Variations in conflict type put differing constraints not only on the medical facilities themselves but also on the mode and extent of transport vehicles available to collect and evacuate casualties. Norms associated with medical services, deployment, and personnel loss rates may not mesh realistically with estimated casualty losses in many kinds of hypothetical modern conflict scenarios between NATO and the Warsaw Pact.

4.6.2 [redacted] Organizational Characteristics

[redacted] The organizational characteristics of the military-medical services are described in subsections as follows:

(1) 4.6.2.1 Soviet and Warsaw Pact military medical services hierarchy

(2) 4.6.2.2 Field medical facilities

[redacted]

[redacted]

(3) 4.6.2.3 Permanent medical facilities

(4) 4.6.2.4 Transport organization and evacuation procedures

4.6.2.1 [redacted] Soviet and Warsaw Pact military-medical service hierarchy. The Soviet medical service is a separate entity of the Soviet Armed Forces. For command and organization, it is subordinate to the Ministry of Defense Directorate of Rear Services. In medical matters, it is subordinate to the Ministry of Health of the USSR. It constitutes the most important element of that ministry.

[redacted] The medical services of the other Warsaw Pact armed forces are similarly organized under the respective rear services (or quartermaster) administrations of the Ministries of Defense and the Ministries of Health. Each of the Pact members is totally responsible for the organization and functioning of the medical services. However, it is thought that through the system of bilateral military agreements, each nation makes its military-medical services available to agreement signatories in the event of a NATO/Pact conflict. Thus, Polish and GDR medical facilities and personnel will be available for use by Soviet forces advancing through Europe. This arrangement will most likely be employed at the division level and above where other than portable, temporary first aid and evacuation facilities will be established.

[redacted] Soviet and Warsaw Pact medical service are not currently fleshed out for wartime employment. There are certainly adequate numbers of qualified physicians and other medical staff personnel prepared annually in the Pact nations, most notably the Soviet Union (Figure 4-36). Soviet literature shows that Soviet medical workers are exposed to considerable political agitation-propaganda in which they are told to consider their military role in wartime.1/ In peacetime, physicians who work on the military-medical staff of the Soviet Armed Forces serve as civilians and officers in the forces. This implies that the military-medical services require mobilization.

[redacted] Nomenclature for Warsaw Pact military-medical personnel varies from country to country. Western literature on the subject also has

[redacted]

[redacted]

COUNTRY OR REGION	1975	1977
Warsaw Pact	25.8	n.a.
Bulgaria	21.5	27.0
Czechoslovakia	23.9	25.3
German Dem. Rep.	18.5	19.5
Hungary	20.1	23.0
Poland	17.1	17.7
Romania	12.4	13.6
USSR	28.9	33.8
NATO Europe	9.2	n.a.
USA	16.7	n.a.
France	14.7	n.a.
Spain	15.4	n.a.
Fed. Rep. Germany	19.4	n.a.
Japan	11.5	n.a.

Sources: ACDA, WORLD MILITARY EXPENDITURES AND ARMS TRANSFERS, 1967-1976; CMEA, STATISTICAL YEARBOOK OF THE CMEA MEMBER-STATES, 1978

[redacted]

[redacted] Figure 4-36. Number of physicians per 10,000 inhabitants in Warsaw Pact and selected Western Nations (this does not include Stomatologists who treat diseases associated with mouth and the digestive tract).

[redacted]

[redacted]

difficulty reaching a consensus on the translation of personnel terminology. Essentially, there are eleven directly medical-related positions in the Pact military-medical services (Figure 4-37). In wartime, all military-medical personnel will hold either a commissioned or enlisted rank. It is expected that women will continue to dominate the medical ranks as physicians, dentists and nurses, as they do today in peacetime in the Socialist nations.

4.6.2.2 [redacted] Field Medical Facilities. Figure 4-38 tabularly describes the major features and functions of the Soviet/Pact military-medical services field organization from the Front to the platoon level. The military medical services derive essentially from the system which evolved from World War II experience. It is structured around a system of "treatment and evacuation by stages," and is theoretically organized to respond flexibly to a variety of military contingencies. It is best suited for conventional offensive operations and the rapid advance of forces.

[redacted] Depending upon the severity of the wound or illness, the casualty victim is processed through a series of stages: collection points, medical points, and field hospitals. There are seven distinct stages in all. Minor wounds are treated as close to the Front as possible so the soldier can be returned to duty as quickly as possible and with as little strain on the transport system as possible. A casualty with more severe medical needs is processed, examined, and superficially treated until he reaches a facility which is capable of fully treating the wound or illness.

[redacted] The Army level has the most complex medical services in the field and doctrinally is to be no more than 24 hours away from the FEBA. The Front also has medical facilities which vary depending upon its role and size. Army and Front medical regiments must be prepared to accommodate casualties from conventional weapons as well as weapons of mass destruction (nuclear, biological and chemical).

[redacted] The medical battalion at the division level is considered to be the key unit of the Pact medical services in wartime (Figure 4-39). At the division field hospital, the casualty can receive basic surgical skills

[redacted]

[redacted]

SENIOR PHYSICIAN - A graduate of a 6-year course in a civilian and/or military-medical institute. In wartime, is usually a major or above, has administrative as well as medical duties, and can be a specialist or non-specialist depending upon training and assignment.

JUNIOR PHYSICIAN - A graduate of a 6-year course in a civilian and/or military-medical facility. In wartime, always a junior officer, usually a captain. Has largely medical duties and is usually subordinate to senior physician in medical regiment or higher level medical facility.

PHARMACIST - A Junior Officer or Senior Sergeant who is part of the technical training staff with 2 to 4 years of training in pharmacology.

FELDSHER (or PHYSICIAN's ASSISTANT) - A Junior Officer or Senior Sergeant who has 2 to 4 years training in an intermediate medical facility. Performs primary surgical and medical tasks either as a subordinate to a physician or individually at the battalion and company level. The Feldsher is crucial in diagnostic work, processing and evacuating the wounded and sick, as well as maintaining overall troop hygiene at the lower unit level.

DENTIST AND DENTAL TECHNICIAN - A Junior Officer or Senior Sergeant. Education varies between 2 to 4 years in intermediate training facility. Assigned at regiment level and above.

RADIOLOGISTS, X-RAY TECHNICIANS - Sergeant with intermediate training. Can be assigned at battalion level but generally is more common at higher levels.

LABORATORY ASSISTANT - Sergeant with intermediate training. Can be assigned to work in higher unit rear facilities where more detailed medical testing and examination is performed.

NURSE - Holds an unknown enlisted rank with intermediate training. Like the laboratory assistants, is trained to work in higher unit rear facilities.

MEDICAL CORPSMAN (Literally: SANITARY INSTRUCTOR) - An enlisted men with 6 months' training at an intermediate school. Serves as a battlefield medic at company level and medical assistants to feldshers or physicians at higher levels.

STRETCHER BEARER - An enlisted man trained at base training facilities. Work at front-line platoon level delivering wounded to collection points and at higher levels.

ORDERLY (Literally: SANITAR) - An enlisted man trained for 6 months in unit medical points at training base. Can serve as front-line medics or in rear capacity as an assistants.

OTHERS - Drivers, kitchen workers, radio operators. Perform largely non-medical duties, and are assigned to medical service.

[redacted]

Figure 4-37. Military-medical personnel in the Warsaw Pact (in descending order of importance [Soviet ranking]) 2/

[redacted]

UNIT	FACILITY	DEPTH FROM BATTLE ZONE		SIZE/CAPACITY	DUTIES	OTHER REMARKS
FRONT	MILITARY MEDICAL DIRECTORATE				ORGANIZES TRANSPORT OF WOUNDED BACK TO USSR MEDICAL ADMINISTRATION, IN CHARGE OF TOTAL SUBORDINATE EDUCATION SYSTEM	USE HELICOPTERS (MI 2, MI 4, KA 15 KA 26) PLANES (AN 2, AN 12)
	FIELD HOSPITALS (2-4 HOURS OPERATIONAL)	MOBILE MEDICAL REGIMENT AS CLOSE TO FRONT LINES AS POSSIBLE		SIZE OF MOBILE MEDICAL REGIMENT VARIES ACCORDING TO NEED	LENDS EXTRA SPECIALIZED MEDICAL ASSISTANCE WHERE NECESSARY.	
ARMY	MOBILE FIELD HOSPITALS (2-3 PER ARMY)	24 HOURS FROM ACTIVE COMBAT ZONE		SIZE OF MEDICAL REGIMENT WHICH RUNS HOSPITALS AND DETACHMENTS AT ARMY LEVEL DEPENDS UPON SIZE AND ROLE OF ARMY. (ABOUT 600 PERSONNEL, EST.)	SORTING HOSPITALS, HOSPITALS FOR HIGHLY WOUNDED, EVACUATION HOSPITALS. SPECIALIZED HOSPITALS ALSO DESIGNATED FOR BURNS, INFECTIOUS DISEASE, THERAPEUTIC AND NEUROLOGICAL WORK. PERFORM MAJOR SURGERY.	- USE CIVILIAN AND MILITARY IN PLACE FACILITIES - HOSPITALS MUST BE MINIMUM OF 5 KM APART (NUCLEAR ATTACK PROTECTION)
	INDEPENDENT MEDICAL DETACHMENTS	12-18 HOURS FROM COMBAT ZONE			TO AUGMENT AND SUPPLEMENT DIVISION LEVEL MEDICAL BATTALIONS IN MASS CASUALTY SITUATION.	- MAJOR SURGERY, PARTICULARLY FROM EFFECTS OF NBC WEAPONS - EVACUATION AND SORTING TO FRONT AND HOMELAND HOSPITALS
DIVISION	FIELD HOSPITAL (2-4 HOURS OPERATIONAL) (PORTABLE)	OFFENSIVE: 10-10 KM FROM COMBAT ZONE	DEFENSIVE: UP TO 20 KM FROM COMBAT ZONE	MEDICAL BATTALION (BASIC UNIT OF MEDICAL SERVICE) 170 PERSONNEL HEADQUARTERS, MEDICAL COMPANY, MEDICAL SUPPLY SECTION, DISINFECTION AND DECONTAMINATION PLATOON, DENTAL FACILITIES, EVACUATION TRANSPORT FACILITIES TENTED WARDS ACCOMMODATE 80 PATIENTS FOR 10 DAYS	PRIMARY FUNCTION: SORTING/EVACUATION ALSO: SHORT-TERM INFIRMARY (10 12 DAYS TO RECOVERY) HANDLES MANDATORY LIFESAVING; PREVENT SEVERE COMPLICATIONS FROM WOUNDS; (IF LOW CASUALTY LOAD) TISSUE WOUNDS, CONTAMINATED BURNS.	- ESTIMATES VARY, BUT CAN HANDLE 200-600 PATIENTS PER 24 HOUR PERIOD 80 86 VEHICLES.
REGIMENT	REGIMENT MEDICAL POST (OR POINT) (PORTABLE)	OFFENSIVE: 6-7 KM	DEFENSIVE: 8-10 KM	MEDICAL PLATOON UP TO 30 PERSONNEL SENIOR AND JUNIOR PHYSICIANS, DENTIST, 2 FELDSHERS, MEDICAL CORPSMEN, PHARMACIST, 7 ORDERLIES, 4 DRIVERS, KITCHEN STAFF, MECHANIC, RADIO OPERATOR	PRIMARY FUNCTION: SORTING/EVACUATION PRIMARY MEDICAL REPORT COMPLETION ALSO: PRE-MEDICAL TREATMENT, HAS BASIC MEDICAL EQUIPMENT FOR EMERGENCY SURGERY, BLOOD TRANSFUSIONS, RADIATION MONITORING, PARTIAL DECONTAMINATION, SHORT TERM INFIRMARY (MINOR WOUNDS, 5 DAYS TO RECOVERY)	- SELF SUFFICIENCY STRESSED FOR FOOD AND MEDICAL SERVICES (MINIMAL DEPENDENCE OF REAR SERVICES) - MAY DEPLOY 2-3 TIMES DURING 24 HOUR PERIOD - CAN USE GAZ-63, STAR 26 LS 110, STAR-699 117 AUM OR 200 - TENTS, FIELD KITCHEN, GENERATOR
BATTALION	MEDICAL POINT (FIRST AID POST) (30-40 MINUITES OPERATIONAL) (PORTABLE)	OFFENSIVE: 1½-5 KM	DEFENSIVE: 1½-5 KM	6-MAN MEDICAL SECTION FELDSHER, 1-2 MEDICAL CORPSMEN ASSISTANT ORDERLY, DRIVERS	PRIMARY FUNCTIONS CASUALTY COLLECTION, PRIMARY PROCESSING, EVACUATION ALSO: PRIMARY FIRST AID, DRESSING STATION PRE-MEDICAL TREATMENT	- USE UAZ-452A, UAZ-469A, GAZ-63, (UAZ-967 M, GAZ-71, GAZ-47 - UST-66 MEDICAL TENT - MAY REDEPLOY AS MUCH AS 2-3 TIMES IN 24 HOUR PERIOD
COMPANY	MEDICAL POINT (FIRST AID POST)	OFFENSIVE: IN BATTLE ZONE	DEFENSIVE: 50-100 METERS	1-2 MEDICAL CORPSMEN (IF HEAVY CASUALTIES: 1 FELDSHER) DRIVERS	• CASUALTY COLLECTION, EVACUATION. • BASIC FIRST AID	USE ONE OR MORE OF ABOVE VEHICLES. CASUALTIES CAN BE EVACUATED TO BATTALION OR REGIMENTAL MEDICAL POST DEPENDING UPON EXTENT OF INJURY
PLATOON	CASUALTY COLLECTION POINT	OFFENSIVE: IN BATTLE ZONE	DEFENSIVE: IN BATTLE ZONE	2 ORDERLIES SELF AID FROM MEDICAL KIT MUTUAL AID OF SOLDIERS	CASUALTY COLLECTION, FIRST AID (WHEN NOT ENGAGED, HYGIENE, HEALTH INSPECTIONS)	ORDERLIES ACCOMPANY COMBAT UNITS IN COMPANY ARMORED VEHICLES EACH SOLDIER EQUIPPED WITH A PACKET OF FIELD DRESSINGS, NBC PROTECTION KIT, SMALL MEDICAL KIT. EACH ORDERLY HAS COMPREHENSIVE FIRST AID KIT, STRETCHERS

Figure 4-38. General organization of Soviet/Warsaw Pact medical support services

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[redacted]

along with mandatory lifesaving aid, diagnostic work, and treatment to prevent complications from wounds. A division field hospital determines whether a casualty ought to be transported to one of the specialized Army field hospitals or should be immediately evacuated further to the rear. The division normally has a landing field for casualty air transport.

[redacted] The military medical facilities below the division level are concerned chiefly with processing, sorting and evacuating casualties to higher unit level medical facilities as close to the combat zone as possible. These grass root medical facilities are distributed fully fleshed out closely behind those units which bear the heaviest losses. More than basic first aid is given only when most urgently needed. A medical point is expected to redeploy as many as two or three times per 24-hour period, if necessary, contingent upon the rates of advance of the combat elements.

[redacted] In a platoon within the battle zone, the wounded are brought to casualty collection points by two orderlies assigned to each platoon, as well as by fellow soldiers. There is considerable emphasis in training and in doctrine on mutual aid of fellow field mates. "Self-aid", or tending one's own wounds, is also stressed and each soldier is equipped with a packet of field dressings as well as a basic NBC protection kit. Transport to the collection points can be with stretchers as well as with makeshift equipment. It should be noted that in the Second World War up to 38 percent or more of the wounded received first aid in the form of self-help or mutual aid.

[redacted]

[redacted]

[redacted]

COUNTRY	BEDS PER 10,000 POPULATION	NUMBER OF BEDS (000)
Bulgaria	87.0	76.8
Czechoslovakia	77.6	117
German Dem. Rep.	107.0	179
Hungary	80.8	86.3
(Mongolia)*	101.0	15.7
Poland	73.3	256
Romania	91.9	199
USSR	121.0	3,140

*Mongolia is not a member of the Warsaw Pact, but is part of the total Soviet forward defense perimeter and therefore has been included here.

SOURCE: CMEA, Secretariat STATISTICAL YEARBOOK OF THE CMEA MEMBER-STATES, 1978 (Moscow, Statistical Publ.), p. 431.

[redacted]

[redacted] Figure 4-40. Hospital beds in the Warsaw Pact Nations (1977) (Does not include military-medical hospitals)

[redacted]

4.6.2.4 [redacted] Transport Organization and Evacuation Procedures. The Warsaw Pact members have printed adequate information on the kind of vehicles available for the military-medical services, but there is a paucity of data on the numbers of each kind of vehicle available when deployed for combat.

[redacted] Most of the medical wheeled and tracked vehicles utilize motors and frames of basic vehicles used in the Pact but have adapted the chassis and bodies for medical purposes. This facilitates their repair and overhaul in the field. Such interoperability is also beneficial when nonmedical vehicles must be outfitted for the transport of casualties to medical points since many types of trucks may be rapidly reoutfitted to accommodate stretchers. Furthermore, many of the same vehicles used in the military-medical services (particularly ambulance-vans) are also used in the civilian sector as ambulances and medical transport vehicles and can be employed by the military in wartime.

[redacted] The tiered system of the medical support service requires the availability of an adequate number of vehicles to move casualties through the various processing and evacuation points to receive full medical care. In theory each higher military unit is responsible for supplying medical and other transport vehicles to the next subordinate unit (Figure 4-41). In this way medical and other supplies from the higher unit can be shipped to the lower. The lower unit can then use the same vehicles to transport its casualties to the higher unit. Hence, depending upon the extent of the wounds, it is conceivable that a wounded person may be transported up to seven times to different treatment evacuation facilities. For each transport, that person must depend upon the next higher unit to supply a vehicle.

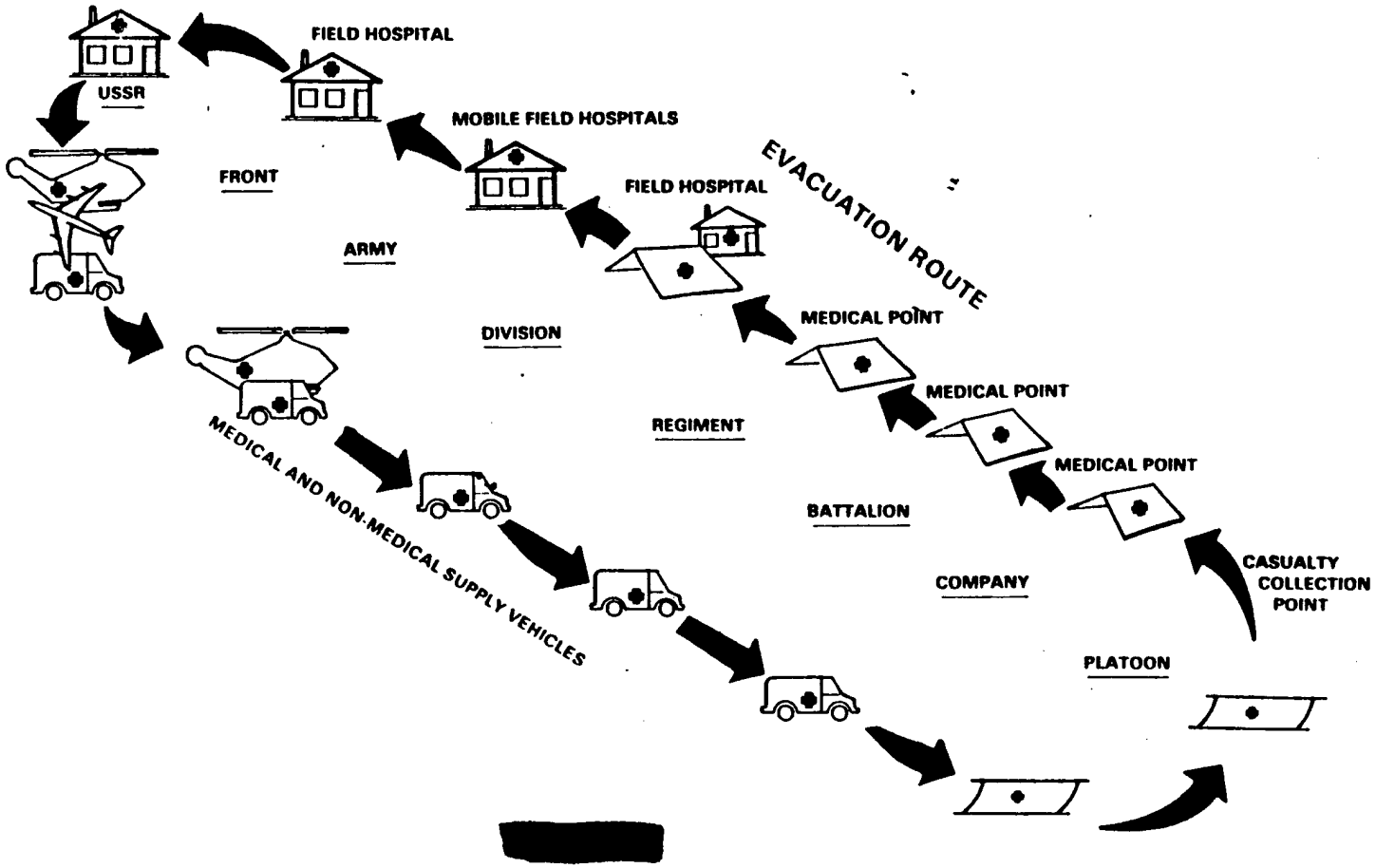

Figure 4-41. Soviet medical resupply and evacuation system

[redacted]

The availability of adequate numbers of vehicles for medical resupply must also be considered. Medical supplies receive the lowest priority (after NBC ammunition, conventional ammunition, POL, spare parts and technical supplies) for allocation of supplementary transport for supply distribution. Higher units are responsible for assuring that supplies are shipped to the next lower unit. They must use either their own minimal equipment for resupply or use the prioritized supplementary military transport system. During an offensive medical supplies will have to be distributed largely through the organic military-medical services' transport system which, in the case of high personnel casualties through nuclear or other means, will be highly taxed for evacuation and collection work. It is not known how smoothly the medical supply system will operation in such contingencies.

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[redacted]

[redacted] The continuous evacuation of casualties to medical points further in the rear and the resupply of those points places great demands on command, control, and communications among medical facilities as well as between the medical services and the supported units. The medical materiel supply system and medical transport facilities could become bottlenecks to the smooth operation of military-medical services due to their dependence on other supply and transport elements with higher priorities.

4.6.3 [redacted] Estimating Personnel Loss Rates and Its Impact on the Military-Medical Services

[redacted] Soviet/Pact casualty estimates and their impact on the military-medical service are examined in the following subsections:

(1) 4.6.3.1 Definition of losses by type

(2) 4.6.3.2 Military personnel losses in conventional conflict

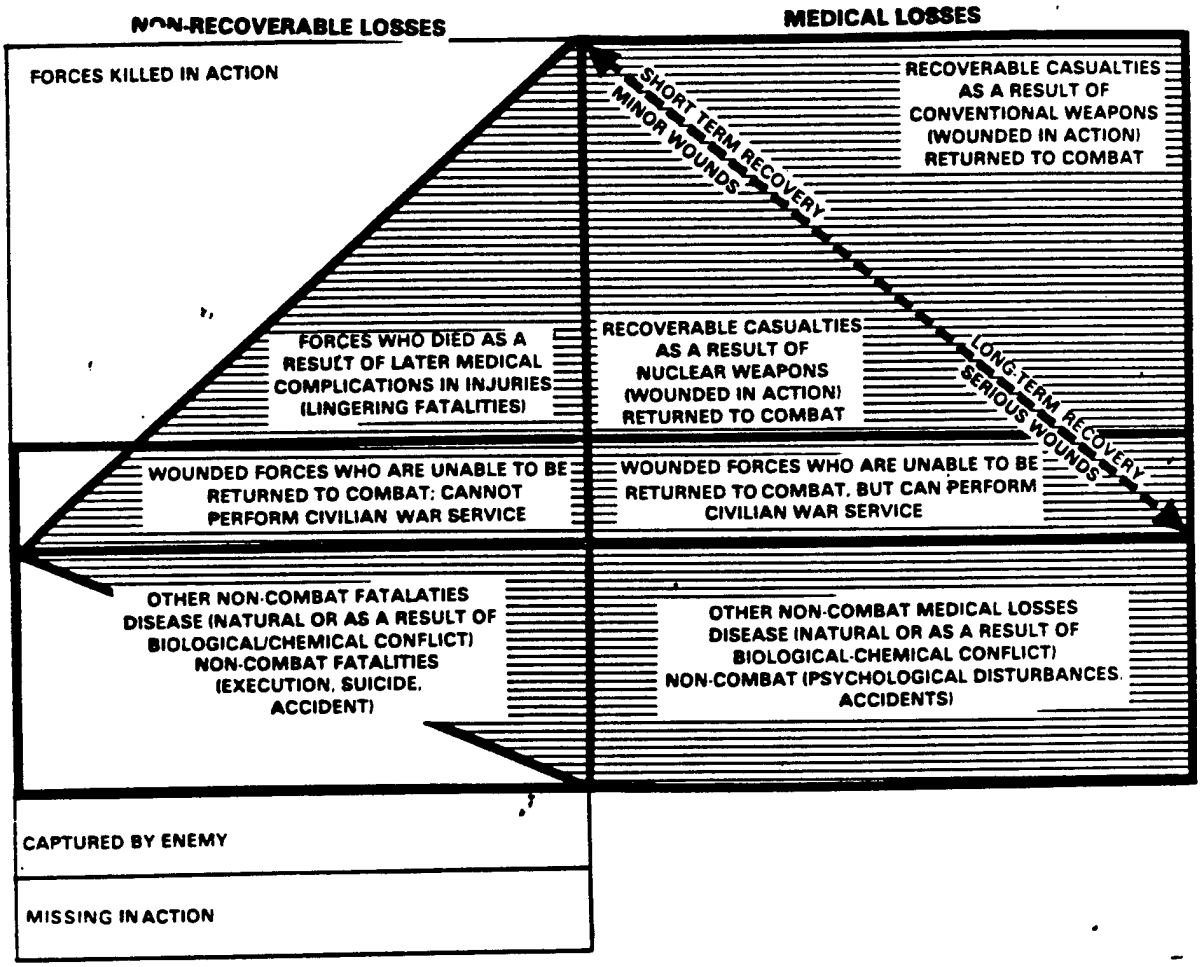
(3) 4.6.3.3 Military losses in nuclear conflict.

4.6.3.1 [redacted] Definition of Losses by Type. The Soviet military distinguishes between two kinds of personnel losses: nonrecoverable and medical.6/ Nonrecoverable losses consist of those who have died, captured forces, and troops missing in action. Those who have died can consist of troops killed in action, those who have died later as a consequence of wounds and injuries, or those who have died for other reasons, such as disease, accidents and other noncombat fatalities (see left side of Figure 4-42).

[redacted] Prior to the Second World War, fatalities as a consequence of complications in wounds and disease due to the general lack of adequate medical facilities, hygiene, and technology far exceeded the number of persons killed in action. In a conventional war today, the ratio has changed. In a nuclear war, however, not only will the number of troops killed in action be higher than in a conventional war, but the multifarious after effects of a nuclear attack will result in even higher numbers of lingering fatalities. Therefore, the military-medical services care for the following kinds of nonrecoverable losses:

- Personnel wounded in action who die of later complications from sustained injuries.

[redacted]



NOTE. SHADED AREA DESIGNATES FORCES LOSSES TREATED BY MILITARY MEDICAL SERVICES

Figure 4-42. Types of losses sustained by military forces in modern mass conflict (Soviet perception)

[redacted]

- Wounded personnel who are unable to return to combat and are incapable of performing any civilian war service.
- Noncombatant casualties who eventually die as a result of disease or accident.

[redacted]

[redacted] It is the goal of the military-medical services of the Soviet/Warsaw Pact to minimize the number of nonrecoverable losses and to optimally be able to return as many of the medical losses to combat as soon as possible. The Soviets claim that during the Second World War, total uniformed (military) fatalities in the Red Army amounted to 7.5 million persons. There are little aggregate data on medical losses. However, 72.3 percent of all wounded and 90.6 percent of all those who became sick among enlisted men and officers in the Red Army eventually returned to duty. This means considerably more than 2.5 million persons may have used the military-medical facilities in that War.

[redacted] Soviet military planners today anticipate large-scale casualties in modern offensive operations either with or without weapons of mass destruction. Doctrine stresses that the "military organism must be able to withstand high losses." Soviet casualty rates do have their limits, however. If overall Army and Front losses exceed 35 percent over a short period (nominally 48 hours), planners estimate the shock will be too great for the force to sustain.7/ Thus, military strategy must not only adhere

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to a doctrine of bold offensive maneuvers but it must also seek to prevent rapid high attrition rates.

[redacted] Soviet doctrine also emphasizes that 60 percent casualties, either nonrecoverable or medical, to division or Army forces constitutes disintegration 8/ and to lower level units (namely the regiment and below) reconstitution or replacment by a similar-type unit from the reserves of the Army. 9/ Soviet training exercises have shown replacement procedures at the company and battalion level and, less frequently, at the regiment echelon. In special cases this procedure may be implemented to replace even a destroyed division with a new or reconstituted division. At any unit level, however, surviving forces and equipment from the destroyed unit will be utilized by the replacement unit.

4.6.3.2 [redacted] Military Personnel Losses in Conventional Conflict. As far as Western sources can ascertain, Soviet estimates of casualty rates in a conventional war between NATO and the Warsaw Pact are based heavily on data gleaned from World War II examples. They recognize that the highest casualties are sustained in offensive operations.

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The problem of casualty collection and service casualties in a nuclear environment extends far beyond the FEBA, involving combatant and noncombatant, civilian and military alike. This means the destruction of many of the field and organic medical aid/evacuation facilities, particularly at the division level and lower. It is estimated that 20 to 30 percent of key materiel items will also be destroyed, which includes cargo and transport vehicles necessary for evacuation. Hence, the tiered evacuation structure will not be able to function according to the same norms as those for conventional conflict.

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Soviet literature has indicated that those wounded by nuclear attacks may not require the proportional degree or extent of medical assistance rendered to the same number of casualties from conventional conflict (Figure 4-45). However, since the total number of casualties will be much higher in the former case, the scales will be balanced negatively for nuclear victims. This means sixty of the hundred persons wounded in conventional combat will require full medical treatment compared to 250 of 500 nuclear casualties. Hence, the ability of the military-medical staff to handle the large number of casualties is still questioned.

[redacted]

[redacted]

CONVENTIONAL CONFLICT	TYPE OF ASSISTANCE	NUCLEAR CONFLICT
60-70	- Casualties requiring full medical treatment military-medical services (hospitalization)	50
n/a	- Share of above casualties requiring surgical treatment (operations)	50-60
10	- Share of casualties requiring shock therapy	20
20	- Share of casualties emergency aid only	25-30
50	- Of which surgical treatment	15-30
50	- Of which shock treatment	70-85
80	- Share of casualties who receive evacuation assignment to battalion level and higher	65-75

SOURCE: E. R. Dzhashitov, Ye.V., Reshetnikov, "Reception Area As Mandatory Element of the Medical Evacuation Stage" MILITARY-MEDICAL JOURNAL, No. 5, 1977, pp 19-22 (English translation UDC 365-33: 616-083.93)

[redacted]

[redacted]igure 4-45. Distribution of medical casualties requiring different kinds of medical assistance in conventional and nuclear conflict environments

[redacted]

[redacted]

4.6.4 [redacted] Assessment

[redacted] In the larger perspective of Front sustainability, military-medical services contribute to the maintenance or restoration of control in all unit levels of Front forces during a conflict by minimizing attrition through prompt and effective medical aid to the wounded and sick. The military medical services are obligated to maximize the ratio of forces returned (to units) to total medical casualties. The Soviets have traditionally considered a loss in strength between 70 to 80 percent to constitute a loss of unity of command for engaged lower level units. However, if rear and rear echelon forces can be kept relatively intact along with total Front command, control and communications (with losses no less than 25 percent), Soviet and Warsaw Pact writers estimate that 40 to 50 percent personnel losses in the Front first echelon can be overcome. In other words, Fronts will be able to sustain themselves even if 30 percent of the divisions in first echelon Armies have been destroyed. The military-medical services, through this tiered evacuation/rescue system described in literature and from experience through training exercises, feel themselves capable of preventing the above figures from rising to the point where there is a loss in the unity of command.

Pages 206 through 208 were deleted

[redacted]

[redacted]

4.7 [redacted] TACTICAL NUCLEAR LOGISTIC SUPPORT

4.7.1 [redacted] General

[redacted]

[redacted] There is little information available in the open press (Red Star-KZ, Military Herald-VV, Rear and Supply-T&S, and books on tactical and logistic operations) in the 1970's regarding the details of nuclear support operations in general and the missions, capabilities, and even the existence of nuclear logistic support units/organizations in particular. The Soviet Russian-English and English-Russian military dictionaries do not include the names or abbreviations for the existing missile support units.

[redacted]

[redacted] The Soviets generally distinguish the SSMs from other antitank guided missiles, antiaircraft missiles, Strategic Rocket (Missile) Forces (SRF) equipment (MRBMs, IRBMs, ICBMs), and other rocket-propelled projectiles by the use of the term "mobile missiles" [redacted]

[redacted]

Pages 210 through 229 were deleted

[redacted]

[redacted]

[redacted] Sustainability is dependent on tactical variables such as the road network capacity, transportation (motor vehicle, helicopter and rail) availability/breakdown/casualty/damage rate, loading/unloading/transloading time, PRTB assets, and the requirements for nuclear weapons--number and time.

[redacted]

4.7.10 [redacted] Assessment

[redacted] Sustainability is dependent on many tactical variables.

[redacted]

Pages 231 through 235 were deleted

[redacted]

[redacted]

CHAPTER 5

[redacted] AIR OPERATIONS AND AIR BASE SUPPORT

5.1 [redacted] GENERAL

[redacted] This chapter discusses the logistical aspects of Soviet/Warsaw Pact air operations and air base support in Eastern Europe. The specific area is that portion of the NATO Guidelines Area which includes East Germany, Poland, and Czechoslovokia. Of direct concern are the Soviet and non-Soviet Warsaw Pact (NSWP) Air Forces located therein as well as, and to a lesser degree, the elements of the SAF in the three Western Military Districts of the USSR; i.e., the Baltic, the Belorussian and the Carpathian Military Districts.

[redacted] To have a full appreciation of the problems associated with the logistic train in sustaining an air operation of any magnitude in conjunction with a combined arms operation, it is necessary to understand the Soviet system of supply. Basically, the system is patterned after the one the Soviets used in World War II with a great degree of emphasis being placed on mobility, flexibility and maneuverability. These factors are clearly incorporated in Soviet military doctrine and are repeatedly stated in various military writings and theses published in the USSR. Colonel Vasiliy Yefisovich Savkin states , in his treatise on THE BASIC PRINCIPLES OF OPERATIONAL ART AND TACTICS, "As we know, it is accepted to identify three stages in the development of the USSR Armed Forces and Soviet military art after the Great Patriotic War."1/ (See ISTORIYA VOYENNOGO ISKUSSTVA, edited by A. A. Strokov, Moscow, 1966, pp. 590-592.)

[redacted] Accordingly, during the first phase (1945-1953) the Soviets took advantage of the "very rich experience of the Great Patriotic War and World War II" in developing their military art in conjunction with that of the more sophisticated conventional weapons and combat equipment which reinforced the firepower, mobility and shock forces of the troops".2/

[redacted] In the second phase (1953-1960), the Soviets turned their attention to the employment, improvement, and stockpiling of nuclear weapons. The third phase began in 1960 and incorporates the further refinement and qualitative transformation in the Army and in military affairs.3/

[redacted]

[redacted]

[redacted]Significantly, Savkin makes the point, "Mobility of the rear lies in its high ability to move, its flexibility, and its maneuverability, and in the capability to support troops fully and in a timely manner in a materiel, technical and medical sense throughout the entire operation."4/

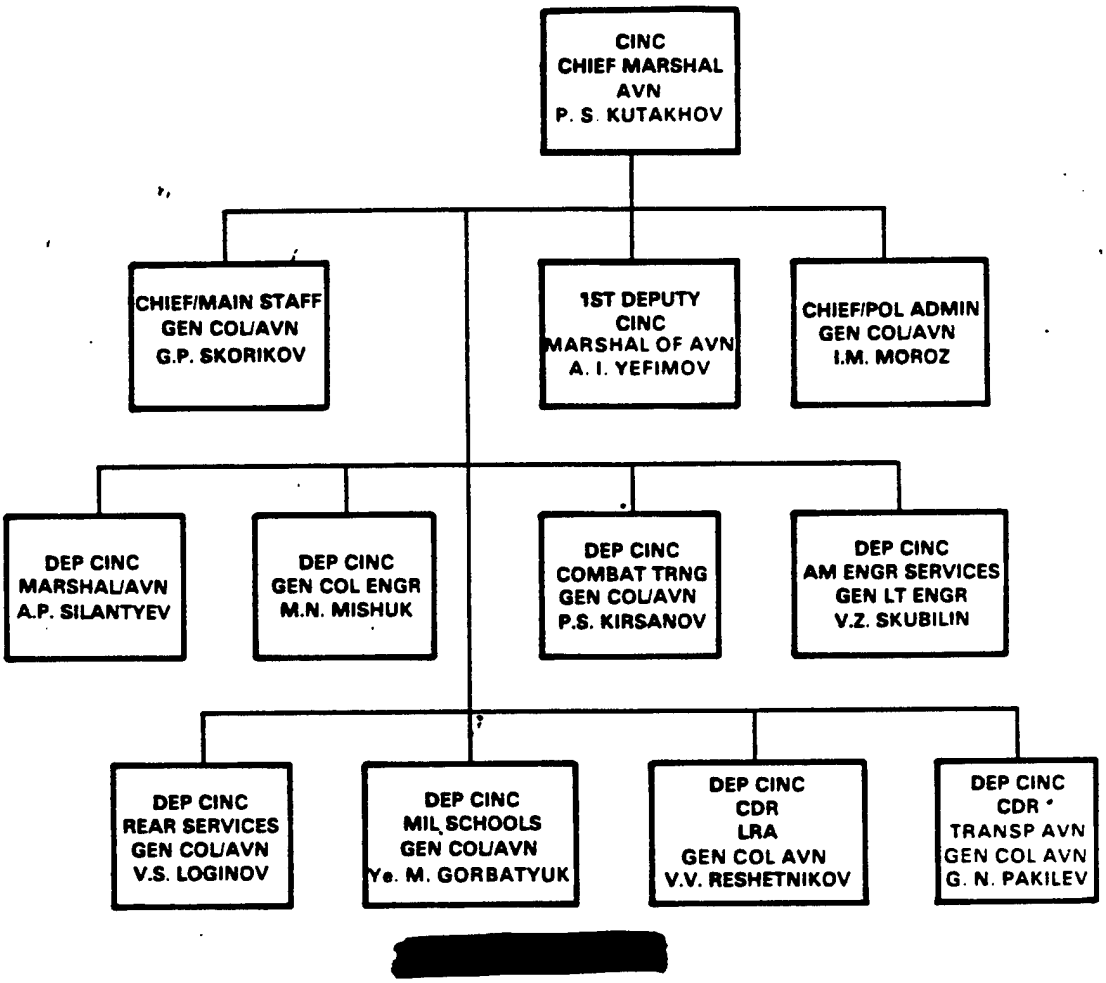
[redacted]Under present conditions, the organization of rear support includes newer and larger measures than heretofore. These facets, coupled with modern day requirements, have complicated the overall system of supply.5/ In this respect, it is well known that command and control of the Soviet armed forces emanates from the Ministry of Defense. This overall authority is vested in the Minister of Defense who, through his various staff agencies, controls all aspects of the Soviet armed forces, including logistics.

[redacted]

Page 238 was deleted

[redacted]

[redacted]



[redacted]

[redacted] Figure 5-2. Command and staff of the Soviet Air Force

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[redacted]

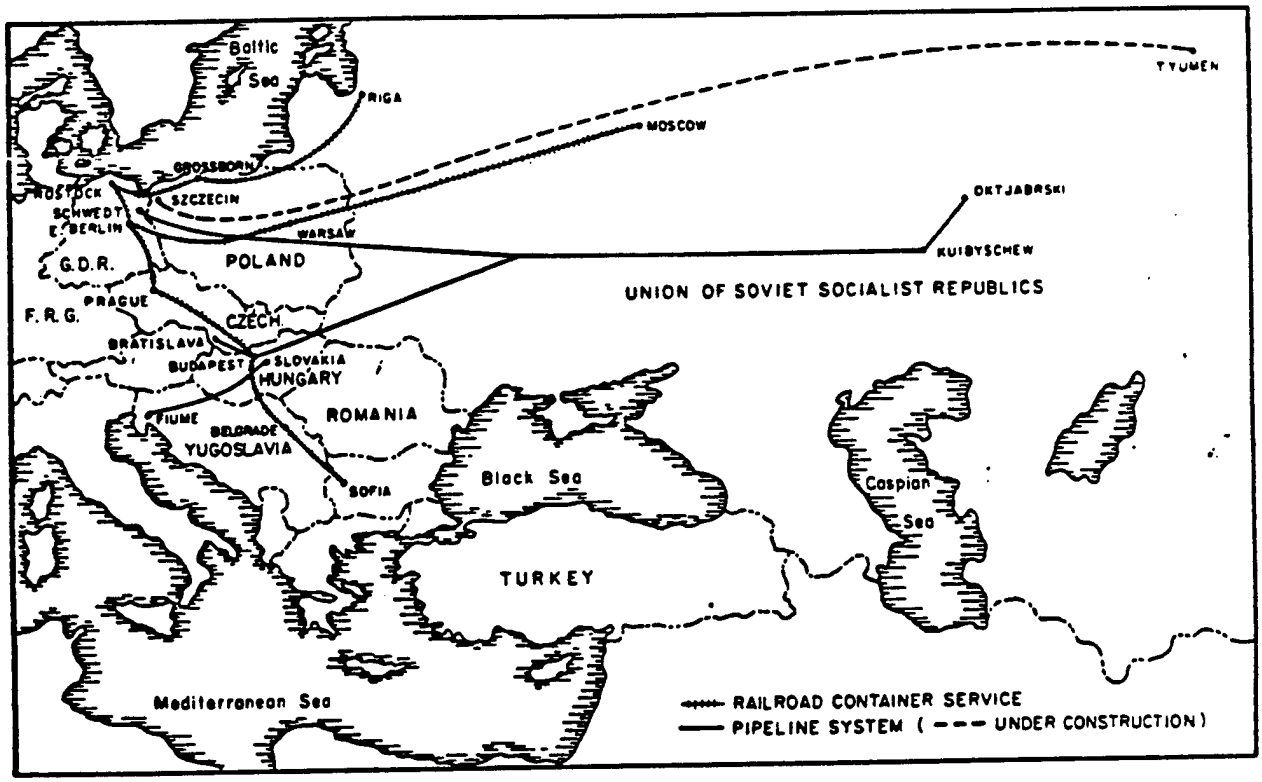
[redacted]

5.3 [redacted] SORTIE RATES

[redacted] One of the principal tasks of any air force in the time of war is the generation of combat sorties. This highly significant facet of air operations planning is tantamount to the proper utilization of air power.

[redacted] The generation of combat sorties is a complex matter contingent upon a number of imponderable variables. In addition to the combat readiness status of the unit, it includes such factors as command decisions, maintenance, logistics and weather. Not to be overlooked is the overall combat situation. 36/

[redacted]



[redacted]

[redacted]Figure 5-10. Warsaw Pact railroad and pipeline systems

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[redacted]

[redacted]

[redacted]

Whether or not these derived sortie rates are accepted as plausible appears to be academic. The fact of the matter is that, all things being equal, they seem to fall within the realm of possibility as indicated by Blumenstein. More importantly, the logistics required to sustain such sortie rates; i.e., POL and ammunition, are readily available as referred to above and will be discussed in the follow-on section.

[redacted]

[redacted]

[redacted]

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[redacted]

CHAPTER 6

[redacted] NATO OPPORTUNITIES

6.1 [redacted] INTRODUCTION

6.1.1 [redacted] General

[redacted] NATO opportunities refer to those potential actions to exploit Soviet weaknesses which will result in a significant and NATO-favorable impact on the outcome of a battle or engagement. As discussed in Chapter 1, other programs have addressed opportunities for the degradation of operational sustainability of attacking forces echeloned in depth. This program assumes development of plans for delaying, disrupting or destroying echeloned forces and focuses on lowering the combat capability of first echelon divisions by reducing, delaying, or denying supplies and other logistic support requisite to sustainability.

[redacted] Especially for critical supplies, such as ammunition and POL, the problem of sustaining offensive momentum can be divided into three interrelated parts:

- The quantitative and qualitative adequacy of stocks and their replenishment at all levels,
- The adequacy of transportation networks and means for distributing these stocks, and
- The capability of the C^3 system to allocate required stocks appropriately with respect to time.

6.1.2 [redacted] Interrelationship With Combat Echelons

[redacted] The essence of this chapter deals, therefore, with the potential for NATO to act with the goal of interfering with or precluding support to key first echelon forces during the course of a battle or operation. While these options may be adopted independently, their implementation would be more effective if done in coordination with plans to delay or preclude employment of the forces of subsequent combat echelons.

6.2 [redacted] TARGETING IMPLICATIONS

[redacted] This section will treat the various types of logistic related targets which support first echelon combat forces. Type targets will be

[redacted]

[redacted]

discussed in terms of issues related to location, employment of munitions, and the impact on enemy operations.

6.2.1 [redacted] Types of Targets

[redacted] The various types of targets involved in the reduction or denial of support to the first echelon divisions include:

- Depots and stockpiles which are fixed or, at least, relatively immobile (6.2.2).
- Stocks and support means in transit or in temporary field locations, e.g., a mobile supply point (6.2.3).
- The road or rail networks over which supplies and support means would be moved. (6.2.4).
- The command and control system for determining allocation and distribution of supplies and support means (6.2.5).
- Non-divisional combat support forces (6.2.6).
- Nuclear logistics (6.2.7).

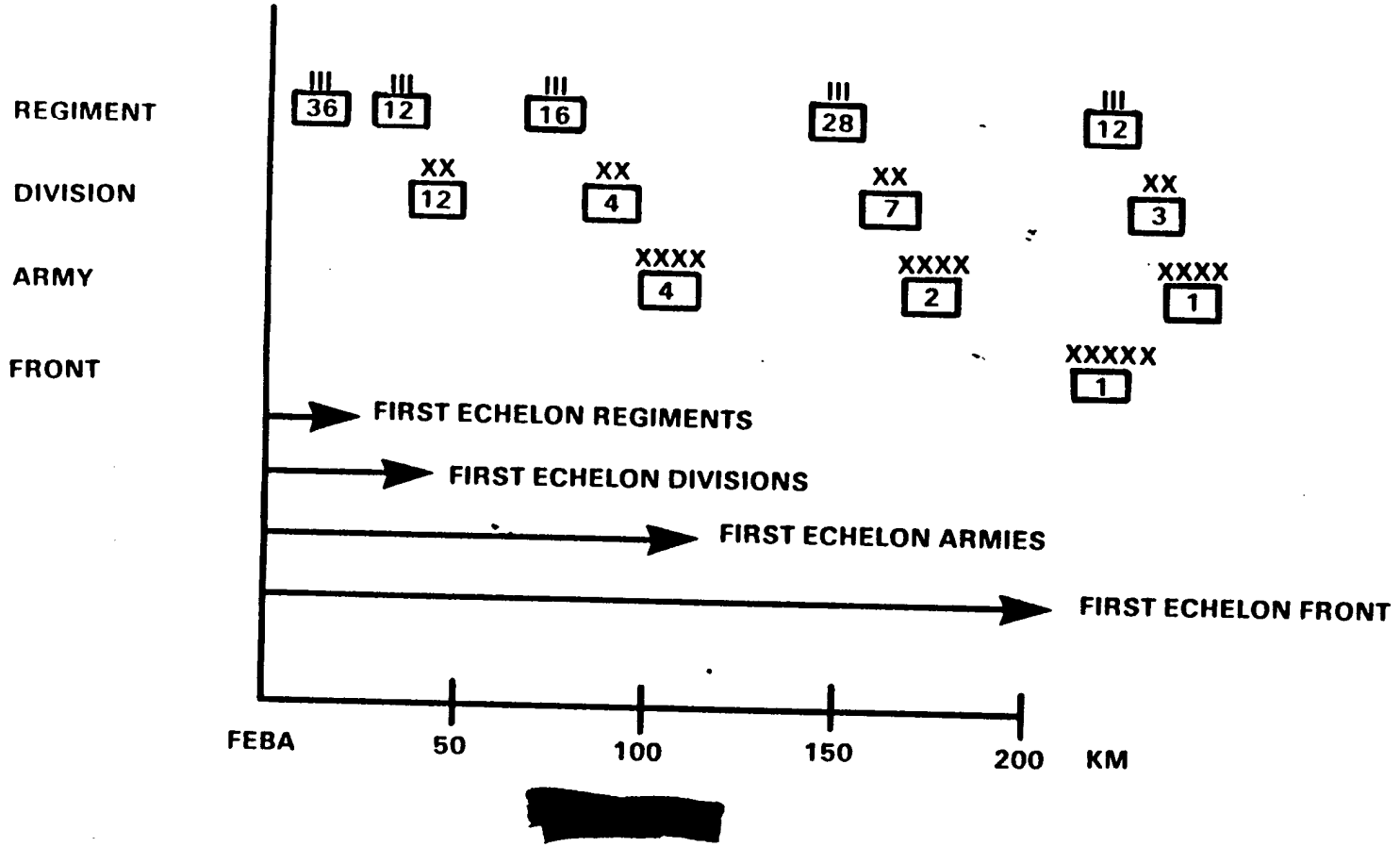
[redacted] The DNA LOGATAK program addresses interruption of the flow of forces and supplies from the depths of the theater; thus, the targets included in that program will not be addressed here. The program addressed in this report is concerned mainly with stocks and support means in transit or in temporary locations, and command and control forward of the Army and Front rear.

[redacted] Medical facilities and units were assessed in Chapter 4 but are not targets. It is recognized that repair facilities are located in the rear area, but as targets they would be of relatively low value.

[redacted]

Pages 271 through 275 were delete

[redacted]



[redacted]

Figure 6-1. Depth and number of rear control posts within a Front

[redacted]

[redacted]

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[redacted]

The assessment methodology categorized targets as described in the introduction, allocated them to range bands, if applicable, and addressed targeting in terms of the three issues mentioned above. The range bands selected correspond to division (I), Army (II), and Front (III) rear areas. Analytical results are provided in tabular form on Figure 6-3. Understanding this figure requires explanation of the parameters used in assessing the value (+, 0, or -) developed.

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Pages 282 through 284 were deleted

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APPENDIX 1
A LEXICON OF SOVIET TERMINOLOGY

[redacted]

COMPILED AND EXTRACTED FROM
DICTIONARY OF BASIC MILITARY TERMS
A SOVIET VIEW
PUBLISHED UNDER THE AUSPICES OF THE USAF

[redacted]

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TABLE OF CONTENTS

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I. Soviet Military Concepts

A. Doctrine

VOYENNAYA DOKTRINA (military doctrine) -- A nation's officially accepted system of scientifically founded views on the nature of modern wars and the use of armed forces in them, and also on the requirements arising from these views regarding the country and its armed forces being made ready for war.

Military doctrine has two aspects: political and military-technical. The basic tenets of a military doctrine are determined by a nation's political and military leadership according to the socio-political order, the country's level of economic, scientific and technological development, and the armed forces' combat materiel, with due regard to the conclusions of military science and the views of the probable enemy.

B. Strategy

STRATEGIYA (VOYENNAYA) (military strategy) -- The highest level in the field of military art, constituting a system of scientific knowledge concerning the phenomena and laws of armed conflict.

On the basis of the tenets of military doctrine, the experience of past wars, and analysis of the political, economic and military conditions of the current situation, military strategy investigates and elaborates on problems pertaining to the training of the armed forces as a whole and the individual Services, and their strategic use in war; the forms and methods of conducting and directing war; and also problems pertaining to comprehensive strategic support of the combat operations of the armed forces.

At the same time, military strategy is a field of practical activity for the higher military command in training the armed forces for war and providing leadership in armed conflict. Military strategy exerts an influence on the preparation of a country for war in such a way as to ensure victory.

STRATEGICHESKIYE REZERVY (strategic reserves) -- Reserves consisting of military-trained contingents and materiel stockpiles, under the control of the Ministry of Defense or the Supreme High Command, and intended for use as supplementary resources in both peacetime and wartime. Besides these reserves, in the course of a war, strategic reserves are created in the form of reserve components of the various Services.

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[redacted]

STRATEGICHESKOYE OBESPECHENIYE (strategic support) -- The complex of measures planned and directed toward creating favorable conditions for conducting war and fulfilling missions assigned in strategic operations. The main forms of strategic support are: strategic intelligence; security of the flanks and rear of armed forces in a theater of operations; defense of sea coasts and naval bases, and expansion of naval and air force basing; camouflage; materiel and technical support; and preparation of the theater of operations for war.

C. Tactics

TAKTIKA (VOYENNAYA) (military tactics) -- A special field in the theory and practice of military art which studies the objective laws of combat and develops methods of preparing for combat and conducting it, on land, at sea, and in the air. Military tactics occupy a subordinate position with respect to operational art and strategy, acting in their interests, and serving to achieve the goals set for it by the operational art. Each Service and branch, by virtue of its intrinsic peculiarities, has its own theory and practice for the organization and conduct of combat and, consequently, its own tactics too, which are called Service tactics or branch (arms) tactics.

D. Organization

VIDY VOORUZHENNYKH SIL (Services of the armed forces) -- The component parts of the country's armed forces, each intended to conduct combat activities in its own sphere of operation (on land, at sea, and in the air or space). The Services of the Armed Forces of the Soviet Union are: Strategic Missile Forces, National Air Defense Forces, Ground Forces, the Air Force, and the Navy. Each Service has its own peculiar combat materiel, homogeneous in essence but diversified in its characteristics and potentialities. Each Service has its own organization, recruitment, training, conditions of sercvice, and supply, and also has characteristic methods of using its armament and military materiel on a tactical, operational and strategic scale.

VOYENNO-TRANSPORTNAYA AVIATSIYA (military transport aviation) -- The element of aviation intended for airborne assault landing operations; for transporting troops and combat materiel; for delivering armament and materiel to troops and bases; and for evacuating sick and wounded personnel.

[redacted]

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ZHELEZNODOROZHNYYE VOYSKA (railroad troops) -- Special troops used to restore, construct, and operate railroads in a theater of operations.

KOMPLEKTOVANIYE VOORUZHENNYKH SIL (manning of armed forces to prescribed strength) -- Meeting the armed forces' requirements for personnel and materiel in accordance with the authorized tables for peacetime and wartime. Buildup of armed forces to prescribed strength of personnel is accomplished, in peacetime, by drafting citizens for active service when they become of eligible age, and in wartime, by mobilizing registered reserve personnel. In manning the armed forces to prescribed strength, a territorial system, and an extra-territorial, or ,mixed, system, are used. Making up shortfalls in materiel is accomplished by centralized distribution and supply by the appropriate agencies of the Ministry of Defense, and in event of mobilization, by deliveries from the national economy as well.

E. Mobilization

MOBILIZATSIONNOYE RAZVERTYVANIYE (mobilization deployment) -- Transition of the armed forces from peacetime to wartime tables of organization and equipment. Mobilization deployment includes: bringing units up to strength with personnel, combat materiel, armament, and transport; providing troops (navy, air force personnel) with all types of personal belongings, rations and provisions, fuels and lubricants; assigning permanent force personnel to activate new subunits, units, and formations; bringing naval vessels into commission from a state of preservation [i.e. mothballing], and conscripting merchant vessels for naval duty; and also, organizing the prompt departure of mobilized troops for their operational destinations.

MOBILIZATSIONNAYA GOTOVNOST' VOYSK (mobilizational readiness of troops) -- Completion of all measures necessary for the transition of a unit, formation or organization from its peacetime to its wartime table of organization and equipment. The time limit for the mobilization readiness of troops is established on the basis of the operational role of the unit or formation, and the time needed for its mobilizational deployment.

MOBILIZATSIONNYY ZAPAS (mobilization reserve) -- Stocks of materiel intended to support the mobilization deployment of newly-activated units, and also to cover combat

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[redacted]

expenditures and losses of materiel during the initial phase of a war.

F. Combat Operations/Effectiveness

SOOTNOSHENIYE SIL I SREDSTV (correlation of forces and facilities) -- The aggregate of indices permitting evaluation of the relative strength of friendly and hostile troops, by comparative analysis of the quantitative and qualitative characteristics of troop organization, performance data on armament and combat materiel, and other indices that define the combat readiness and combat capability of the troops.

BOYEVOY PORYADOK (order of battle; combat formation) -- A grouping of forces and weapons deployed for battle. A combat formation is drawn up in accordance with the type, nature and concept of a forthcoming battle.

BOYEVAYA VOZMOZHNOST' (combat capability) -- The aggregate of indicators characterizing the combat qualities and technical capabilities of formations (units, subunits), service branches and special troops during execution of their combat mission. Combat capability is determined by the extent to which the unit is up to strength, by its level of training, and by the degree to which it is equipped with armament, combat materiel and quality and quantity of transport facilities.

BOYEVAYA GOTOVNOST' VOORUZHENNYKH SIL (VOYSK) (combat readiness of the armed forces [of troops] -- The state determining the degree of readiness of each Service of the armed forces (troops) to fulfill the combat missions assigned to it. The basic index of the armed forces' readiness for combat is their ability to undertake combat missions, within the prescribed time limits, having regard to the aim, plan, and situation.

BOYEVAYA SPOSOBNOST' (BOYESPOSOBNOST') (combat effectiveness) -- The ability of subunits, units, formations and strategic formations to perform combat operations and accomplish the missions assigned to them.

[redacted]

[redacted]

BOYEVOY SOSTAV (effective combat strength) -- The effective strength of a unit, formation or major field force intended for direct conduct of an operation or battle. Effective combat strength units are: for tactical purposes -- missile launcher, tank, gun, aircraft, battalion, battery, squadron, field engineer company, warship; for operational and strategic purposes -- the division (in all Services of the armed forces) or its corresponding unit, but in this case effective combat strength is calculated primarily in terms of missile launchers and nuclear ammunition; for infantry purposes -- the total numerical strength of ground forces, the number of machine guns, cannon, tanks; for air force purposes -- the number of aircraft; and for naval purposes -- the number and types of warships.

NACHAL'NYY PERIOD VOYNY (initial period of a war) -- A decisive period of a war, ranging from the outbreak of hostilities to attainment of the short-term strategic goals assigned to the first strategic echelon of the country's armed forces. Under the most favorable conditions, the goals of the war may be attained during the initial period of a war.

TEATR VOYENNYKH DEYSTVIY (theater of operations) -- A particular territory, together with the associated air space and sea areas, including islands (archipelagos), within whose limits a known part of the armed forces of the country (or coalition) operates in wartime, engaged in strategic missions which ensue from the war plan. A theater of operations may be ground, maritime, or intercontinental. According to their military-political and economic importance, theaters of operations are classified as main or secondary.

VYZHIDATEL'NYY RAYON (assembly areas) -- An area of terrain occupied by troops before going over to the offensive. All measures associated with preparation for the offensive are taken in the assembly area. An assembly area must provide good conditions for concealment against ground, air and radar observation by the enemy, and must afford the troops protection against weapons of mass destruction.

VYZHIDATEL'NAYA POZITSIYA (assembly position -- A sector of terrain prepared as regards engineering, and intended

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[redacted]

as covered accommodation for combat materiel and personnel of missile subunits and rocket-launching artillery prior to their moving into a launch or firing position.

FRONTOVAYA NASTUPATEL'NAYA OPERATSIYA (front offensive operation) -- An operation conducted by the forces and facilities of one front in coordinated action with other Services, and having an important operational (or strategic) goal. A front offensive operation is conducted in one or several operational sectors of a theater of operations.

YEMKOST' TEATRA VOYENNYKH DEYSTVIY (Support capability of a theater of operations) -- The possibility, in a given theater of operations, of supporting the deployment of any large strategic grouping consisting of several strategic formations of ground, naval and air forces, and formations of other Services, whose military activities may be united by a single strategic concept and plan. The support capability of a theater of operations is determined by its military, political, and strategic importance, by the overall size (width and depth) of the theater, by its geographical position (by the presence of seas, by the relief of the terrain), by the degree of development and state of the airfield net, ports, communication routes, and by the presence and number of important operational and strategic objectives of military operations.

YEMKOST' NAPRAVLENIYA (support capability of a sector) -- The possibility of deployment, operations, materiel and technical support of such and such a grouping of troops (or air forces) in a given sector. The support capability of a sector is characterized by the width of the zone (or air space), depth of the sector, road network (or airfield net), and number of important objectives of operational or strategic significance in the given sector.

PERVYY ESHELON (first echelon) -- That part of an operational order of battle or combat order of troops which is in the first line or in close contact with the enemy, and is used to carry out specific missions.

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VTOROY ESHELON (second echelon) -- The part of an operational formation or combat fomation of troops which is not directly participating in an engagement (battle) at a given moment, but which is intended to be used to build up the force of a strike during an offensive, to increase the stability and aggressiveness of defense, and to replace troops of the first echelon in the event that the latter sustains heavy losses. The existence of a second echelon creates favorable conditions for building up strength, carrying out a maneuver, or rapidly transferring effort from one sector to another during an operation (battle). In contrast to a combined-arms reserve, combat missions for a second echelon are assigned at the same time as those for the first echelon.

PEREGRUPPIROVKA SIL (VOYSK) (regrouping of forces [for troops]) -- Changing the existing operational-strategic disposition of forces and facilities in theaters (or a theater) of hostilities, and in operational sectors, by moving strategic formations (or formations) of aviation and naval forces from one area to another for the purpose of creating a new grouping and transferring operational effort to a new sector. Regrouping of forces is an important component part of maneuver and, depending upon the situation and the impending mission, may be accomplished either before, or during operations in order (a) to strengthen operational groupings during a transition from a defense to an offensive and to exploit successes, or when changing the axis of the main thrust in the course of combat, (b) to restore reserves (second echelons), etc. Regrouping of forces is accomplished by mass transportation and movement of troops (and/or redeployment of aviation and naval forces). According to its purpose and scale, regrouping of forces may be strategic, operational, or tactical.

BOYEVYYE POTERI (combat losses) -- Losses of personnel and materiel sustained as a result of enemy action.

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II. Soviet Armed Forces - Branches and Services

A. Ground Forces

ARTILLERIYA (artillery) -- (1) One of the service branches possessing great fire power; (2) a type of weapon, or the aggregate of armament items, including the entire complex of a firearm and all the equipment needed for its effective utilization in combat; (3) the science dealing with the fundamentals of a fire weapon's structure, its properties, and the methods of using it in combat.

INZHENERNYYE VOYSKA (engineer troops) -- Special troops that provide engineering support for combat operations of all the Services and service branches. Engineer troops perform the most complex tasks, requiring special training and the use of various engineering equipment. According to their role, engineer troops are subdivided into the general (combat engineer) and special categories (which includes: pontoon and bridge, assault crossing, highway, works service, camouflage, construction, and other units and subunits). According to their affiliation, engineer troops are subdivided into the organic category, in which case they are a component part of ground force formations and units, or into one of the following categories: army, front, Supreme High Command Reserve, Navy, Air, or one of the other Services of the Armed Forces.

KOMENDANTSKAYA SLUZHBA (commandant's service) -- The aggregate of measures organized by staffs at all levels for the purpose of maintaining general order in areas where troops are disposed or deployed, and also regulation of traffic and monitoring the observance by troops of camouflage measures. The commandant's service is organized along troop routes, and in the vicinity of the disposition of troops and rear units and establishments, at the safe passages through mine-and-explosive barriers and contaminated areas, at water obstacle crossings, at points where troops are being embarked or disembarked, and under other conditions of the situation.

INTENDANTSKAYA SLUZHBA (quartermaster service) -- A service providing troops with materiel, clothing, and provisions, and managing other services for personnel.

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B. Rear Services

ORGANIZATSIYA TYLA (organization of the rear) -- Measures taken for the purpose of comprehensive support of troops (or forces) under any conditions of the situation. They consist in preparation, deployment, and relocation of rear formations, units, and establishments; in the preparation and maintenance of communications; and in the protection, defense, and guarding of rear installations.

TYL VOORUZHENNYKH SIL (rear services of the armed forces) -- The forces and facilities forming an organizational part of the Armed Forces, as well as those put at the disposal of the military command by the state, for comprehensive material, technical, and medical support, and servicing of missile forces, ground forces, national air defense forces, the air force, and the navy. The rear services of the armed forces are divided into central and operational rear services, and troop rear units.

KOMPLEKT TYLOVYKH CHASTEY I UCHREZHDENIY (authorized table of rear units and establishments) -- The number of rear units and establishments for each type of support, authorized for peacetime and wartime, in major field forces, formations, and military units.

FRONTOVAYA BAZA (TYLOVAYA, PEREDOVAYA) (front [rear, forward] base) -- The rear services element of front supply. A front base includes a base administration, materiel depots, and base servicing units (labor, motor transport, engineer, communications).

ARMEYSKIY TYL (army rear services) -- A component part of the operational rear, including army rear services units and materiel-supply establishments which are located in an army rear area and intended for providing rear services support troops to army formations and individual army units.

VOYSKOVOY TYL (troop rear units) -- Rear services units and subunits with reserves of materiel, forming part of troop formations (units, subunits) and providing them with rear services support.

TYLOVAYA OBSTANOVKA (rear area situation) -- Part of the overall military situation. It defines the state and position of rear services formations, units, and establishments; the state of materiel, technical,

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medical, and other types of rear services support of the troops, transportation routes, and means of transport; conditions for bringing up materiel; the social-political composition and mood of the population; the economy of the area of activities, and the prospects for using local resources; the state of the security, defense, and protection of the rear, control of rear services and communications; the nature of the terrain, and climatic and weather conditions.

TYLOVAYA POLOSA FRONTA (ARMII) (rear area zone of a front [or army]) -- Territory with railroads, highways, and waterways, airfields, pipelines, lines of communication, and local facilities. The rear area zone of a front (or army) is bounded to the right and to the left by dividing lines; to the rear, by the rear boundary of the front (or army); and in a forward direction, it reaches the vicinity of mobile army bases and divisional depots.

TYLOVYYE CHASTI I UCHREZHDENIYA (rear services units and establishments) -- Units and establishments intended to fulfill missions related to material, technical, medical, and other types of rear services support and servicing of troops (aviation, navy). Rear services units and establishments include supply depots, bases, transport units, repair workshops, hospitals, etc.

OPERATIVNYY TYL (operational rear) -- Rear formations, units, and establishments, with their stockpiles of materiel, that form part of a major field force or strategic formation, used to provide comprehensive rear support for the troops (forces), and located in a particular zone (region) for this purpose. The operational rear includes: the rear of a front, an air defense district, or a fleet; the rear of an army, a flotilla, or naval aviaiton.

GLUBOKIY TYL (deep rear) -- That part of the territory of a state (or states) beyond the range of enemy operational and tactical means of attack. Under conditions of nuclear-missile warfare, the basic elements of the enemy deep rear may include: the economic base of the war; the governmental and supreme command systems; and the strategic nuclear weapons of an armed conflict.

TYLOVOY PUNKT UPRAVLENIYA (TPU) (rear services control point) -- A control post organized to direct the rear services of a major field force or strategic formation, formation, or unit.

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TYLOVOYE OBESPECHENIYE (rear services support) -- The complex of measures related to the organization of rear services, to the preparation and utilization of all types of transportation routes and transport, to material, technical, medical, airfield engineering, airfield-technical, and other types of support and servicing; and in the navy, besides, to engineering, emergency and rescue, and chemical support of forces.

TYLOVAYA RAZVEDKA (rear area reconnaissance) -- Collection of data on the state of the rear area, its economy, and its main installations. Observing that conveyance of materiel and evacuation will depend to a considerable degree on the state of transportation routes (railways, waterways, and roads) and the airfield net, these installations must be reconnoitered with special care. When conducting rear area reconnaissance, a study should also be made of the sanitary-epidemic and veterinary-epizootic state of the area, and the state of water sources.

PODVIZHNAYA ARMEYSKAYA BAZA (mobile army base) -- An army rear services element, including base administration, dumps with reserves of materiel, and units for servicing the base. The amount of material and inventory held in a mobile army base is such as to permit the base to be moved by land from one region to another, using transportation organic to the army.

BRIGADA TRUBOPROVODNAYA (pipeline brigade) -- A rear services formation which includes several subunits of main field pipeline troops.

STATSIONARNYY TRUBOPROVOD (permanent pipeline) -- A system of pipes and pumping facilities used to transport petroleum products. It is used in the national economy and in the armed forces at depots, bases, and [industrial] plants, and also to transport fuel over great distances.

DIVIZIONNYY OB'YEDINENNYY SKLAD (consolidated division depot) -- A mobile divisional establishment, consisting of stores for various kinds of materiel, clothing and footwear repair workshop, division field [steam] bathhouse, and a security detachment.

KAPITAL'NYY (ZAVODSKOY) REMONT (capital [plant] repair) -- One of the types of maintenance for combat materiel, done both in a country's industrial plants

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and in theaters of operations, and consisting of repairing or replacing worn or damaged assemblies, sub-assemblies, and components, followed by adjusting and testing of the machine in running condition. Capital (plant) repair may be combined with the modernization of combat materiel, accessories and equipment.

TEKUSHCHIY REMONT (routine maintenance) -- A type of maintenance used for combat materiel and military equipment, consisting in rectifying defects that occur during its operation, correcting malfunctions, and replacing individual parts.

SREDNIY REMONT (intermediate overhaul) -- One of the types of overhaul of combat materiel and equipment, consisting in dismantling-assembly and adjustment work, in assembly and engine repair or engine replacement. During an intermediate overhaul, damage, defects, and deficiencies are made good, so that the service life of the unit is prolonged.

PODVIZHNYY AVTOREMONTNYY ZAVOD (mobile motor vehicle repair facility) -- A military unit of front subordination that undertakes major overhauls of motor vehicles.

GOSUDARSTVENNYYE REZERVY (state reserves) -- The reserves of various kinds of materiel (foodstuffs, fuel, semi-finished products, strategic raw material, oil, etc.), which are controlled by special state authorities and are consumed only with government approval. A proportion of the state reserves is intended for the material and technological support of the armed forces.

OPERATIVNYYE REZERVY (operational reserves) -- Combined arms formations, and also formations (or units) of various service branches (or forces), used to carry out missions which arise suddenly in the course of an operation. Operational reserves are part of an operational order of battle of major field forces.

PODVIZHNYY REZERV MATERIAL'NYKH SREDSTV (mobile reserve of materiel) -- An established quantity of materiel loaded onto transport (rail, road, air, water), and intended for dispatch at short notice, and in the required direction, for the purpose of replenishing an unanticipated expenditure.

RASPORYADITEL'NAYA STANTSIYA (regulating station) -- A railroad junction or large railroad depot situated at

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the rear boundary of a front, and used for the reception, processing, and onward transmission, by destination, of incoming freight consignments destined for the front. Regulating stations are designed by General Staff directive. Detraining and entertaining of troops, unloading and loading of military cargoes, and protracted halting of echelons in transit, are all prohibited at regulating stations.

SLUZHBA VESHCHEVOGO SNABZHENIYA (clothing and equipment supply service) -- One of the rear services of the Armed Forces, responsible for supplying troops with personal clothing and equipment.

SLUZHBA PRODOVOL'STVENNOGO SNABZHENIYA (food supply service) -- One of the rear services of the Armed Forces. The food supply service implements measures associated with providing food for army, navy, and air force personnel; establishes ration scales; procures (and receives) foodstuffs and ware from state and cooperative establishments; organizes the operation of kitchens, mess halls, bakeries, refrigeration facilities, and ration dumps; and organizes accounting, storage, timely replenishment, and freshening of stocks, insofar as these activities pertain to the foodstuffs, ware, and inventory in its depots.

POLEVOY MAGISTRAL'NYY TRUBOPROVOD (field trunk pipeline) -- A system of pipes and pumping facilities intended for transporting fuel (gasoline, kerosene, diesel fuel, etc.). A field pipeline may be used most effectively in a front link for supplying fuel from front service area bases to the sections of front on-ground fuel dumps, and also to mobile aviation bases, of air armies. Starting points for deploying a field pipeline may be: fuel dumps located on the route of a permanent trunk pipeline; large covered fuel bases with reserves permitting protracted operation of the pipelines; and also points on rail and water transportation routes, with uninterrupted deliveries of fuel from areas in the deep rear.

C. Maintenance/Supply

MATERIAL'NYYE POTREBNOSTI VOORUZHENNYKH SIL (materiel requirements of the armed forces) -- The requirements of all Services for combat, transport, and auxiliary materiel, control and communication facilities, ammunition, fuel, means of protection against weapons of mass destruction; and in reserve units, provisions, etc. In

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peacetime, the materiel requirements of the armed forces are made up of the requirement for training purposes, activation of new units, creation of reserves for wartime purposes, and for current issue of food and clothing to the troops. In wartime, the materiel requirements of the armed forces are made up of the requirement to activate new units in the course of the war, to replace combat losses, to cover expenditures associated with the conduct of combat activities, and to meet the current requirements of troops (and naval and air force personnel) for food and clothing.

NEPRIKOSNOVENNYY ZAPAS (NZ) (emergency reserve supplies) -- Stocks of weapons, ammunition, fuels and lubricants, provisions, military-technical and other supplies, which are held in established quantities, either in the immediate possession of soldiers, or in depots and bases, or with combat equipment, guns and unit transport vehicles. Emergency reserve supplies are intended for use in special circumstances only, with the permission of the senior commander.

RASCHETNO-SNABZHENCHESKAYA YEDINITSA (supply and accounting unit) -- The conventional measure of supply items in terms of which the item requirements for troop-support purposes are calculated. Supply and accounting units are the unit of fire; fuel load; daily ration; the set, kit, or unit; load; charge, ammunition load; the numerary adjunct "piece(s);" and the usual units of weight and volume.

BAZA SNABZHENIYA (supply base) -- A supply facility, including a group of warehouses with the necessary inventories and handling equipment, intended to provide the troops with materiel support.

ZAPASY MATERIAL'NYKH SREDSTV (supply stockpiles) -- The quantity of the various types of materiel in regular supply which is to be maintained in troop units and in various rear services elements. According to their purpose, place of storage, and the unit responsible for them, stockpiles of supplies may be in the following categories: emergency, minimum-level, mobile (transportable and portable), center, front, naval, or army. Mobile supplies (transportable and portable) are sometimes grouped under the general classification "unit."

MATERIAL'NYYE SREDSTVA (supplies) -- Supplies needed by the armed forces for daily use and for their combat activity. They include missiles and missile fuel,

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munitions of all types, armament, diverse technical assemblies, provisions, clothing, and engineering, medical, and other stores.

NESNIZHAYEMYY ZAPAS (minimum level of supply) -- Stocks of various types of materiel intended to meet current requirements. As these are expended, they are promptly replenished to established levels in all the units where they are maintained.

MATERIAL'NOYE OBESPECHENIYE (materiel support) -- A system of measures adopted to satisfy the needs of the armed forces for all types of supplies for daily use and for combat activity.

BOYEVAYA TEKHNIKA (combat materiel) -- The totality of all military and technical equipment used in combat and to support troops in combat and operations.

BOYEVOYE PITANIYE (combat materiel supply) -- A system for supplying troops with everything needed for combat (weapons, ammunition, etc.).

NORMY MATERIAL'NOGO OBESPECHENIYA (levels of materiel support) -- The quantities of materiel authorized for issue to troops and intended for use (or expenditure) during a definite period of time for an operation (or battle) or for retention by individual units or in depots. Levels of materiel support are worked out by the appropriate supply service and promulgated by the Ministry of Defense.

NORMY RASKHODA MATERIAL'NYKH SREDSTV (materiel expenditure rates) -- The quantities of materiel authorized, temporarily or permanently, per consumer, per unit time or per unit of work done. The materiel expenditure rates for each battle or operation are established by the command for subunits, units, formations, and major field forces on the basis of combat missions actually assigned to them.

LIMIT RASKHODA (limit of expenditure) -- The norms for the expenditure of materiel of all kinds, established for a definite period of time, for an operation, or for a battle, in accounting-and-supply units, or expressed as a weight.

SREDNESUTOCHNYY RASKHOD (mean daily expenditure) -- The amount of materiel expended, on the average, during one 24-hour period. The mean daily expenditure is usually

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reckoned, for the basic types of materiel, in fractions of the appropriate supply-and-accounting units, namely: the unit of fire; the fuel load; the daily ration; and the unit.

SUTOCHNAYA DACHA (daily ration) -- The quantity of foodstuffs allowed per serviceman in accordance with the norms of daily nutrition. The daily ration of a subunit, unit, or formation is the amount of foodstuffs required to feed all personnel of the subunit, etc., for one day. The daily ration is the conventional unit used to calculate the troop's requirement for foodstuffs, and to account for provisions.

RASKHOD BOYEPRIPASOV (ammunition expenditure) -- The number of projectiles (or bombs, mortar rounds, bullets) allotted for, or actually expended on, the fulfillment of a particular fire mission. However, for a considerable number of fire missions performed during a specified period of time (for example, in the course of an air bombardment, in preparatory fire, in a day of combat), ammunition expenditure is expressed in units of fire.

PODVIZHNYYE ZAPASY MATERIAL'NYKH SREDSTV (mobile stocks of materiel) -- Stocks of materiel (all types of ammunition, fuels and lubricants, military and technical equipment, provisions, etc.) kept with transportation elements of formations, units, and subunits, and also with weapons, as well as in the immediate possession of personnel. Mobile stocks of materiel are intended to provide the troops with all the necessities of life and needs for combat operations in the event of a breakdown in supply. Mobile stocks of materiel must be replenished daily, and must always be kept up to established levels.

BOYEVOY KOMPLEKT (unit of fire) -- The supply-and-accounting unit adopted for operational and tactical planning with regard to materiel and technical support required by troops (aviation) in order that a particular combat mission may be accomplished.

VOZIMYE (PODVIZHNYYE) ZAPASY (unit reserves) -- Reserves of materiel (ammunition, fuels and lubricants, provisions, technical and other movable stores), authorized in relevant norms and tables, and constantly held by military units and formations in organic transport and in proximity to combat materiel. Unit reserves are used for the timely and uninterrupted support of combat activities by the units maintaining them.

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TEKHNICHESKAYA POZITSIYA RAKET (missile-servicing position) -- The area of terrain on which a missile-servicing unit (or subunit) is deployed for the purpose of carrying out the technical preparation of missiles for launching.

TEKHNICHESKOYE ZAMYKANIYE KOLONN (technical maintenance echelon) -- Repair-and-evacuation facilities and fuel supply service components, which move at the rear of a march column, being intended to render assistance to stragglers or damaged vehicles.

TEKHNICHESKOYE OBESPECHENIYE (technical support) -- The complex of measures that includes the organization and accomplishment of technically correct use, technical servicing, and maintenance (including preventive maintenance) of missile, artilley, and chemical-warfare armaments; armored-vehicle, automotive, aircraft, and warship engines; as well as arranging for their timely repair and evacuation.

BOYEVAYA ZHIVUCHEST' (damage control) -- The ability of personnel servicing armament and combat materiel, of ships' crews and air crews, to maintain fighting efficiency and to restore combat effectiveness rapidly in the event of casualties and appreciable damage to armament and combat materiel.

VOORUZHENIYE (armament) -- (1) A weapon mounted on a combat vehicle, aircraft, warship, etc,; (2) a weapon in the possession of a given military subunit, unit formation, major field force or service branch; (3) the process of equipping a military subunit, unit, formation or major field force with weapons and military-technical materiel.

BOYEVYYE PRIPASY (BOYEPRIPASY) (ammunition) -- Missiles of various types, artillery shells, mortar rounds, aerial bombs, naval torpedoes and depth charges, hand grenades, and cartridges for small arms.

SLUZHBA RAKETNO-ARTILLERIYSKOGO VOORUZHENIYA (millile and artillery supply service) -- A service engaged in the supply of missile and artillery armament, and infantry arms, missiles and their warheads, projectiles (mortar rounds), small-arms ammunition, and other types of missile and artillery equipment.

SLUZHBA SNABZHENIYA GORYUCHIM (fuel supply service; "POL supply) -- One of the services of the Armed

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Forces, engaged in providing the troops (aviation) and naval forces with missile propellants, fuels, oils and greases, special fluids, etc.

ZAPRAVKA ((1) fuel unit; (2) the fueling process) -- (1) The quantity of fuel established for one vehicle (tank, armored personnel carrier, automobile, tractor, missile, aircraft, or warship) as a supply-and-accounting unit for calculating fuel requirements and meeting them. For tanks, self-propelled artillery mounts, tracked armored personnel carriers, tractors, and other tracked vehicles, aircraft, or warships, the fuel unit is determined by the capacity of the tanks (systems, compartments) constituting their fuel system. For wheeled vehicles, the fuel unit must, as a rule, permit the vehicle to travel a certain distance (based on the official fuel-consumption rate). The fuel allowance for units, formations, and major field forces is reckoned on the basis of all vehicles held, within the limits of authorized strength. (2) The process of filling the fuel tanks and receptacles with fuels and lubricants to the limit of their capacity.

D. Engineer Support

INZHENERNYYE VOYSKA (engineer troops) -- Special troops that provide engineering support for combat operations of all the Services and service branches. Engineer troops perform the most complex tasks, requiring special training and the use of various engineering equipment. According to their role, engineer troops are subdivided into the general (combat engineer) and special categories (which includes: pontoon and bridge, assault crossing, highway, works service, camouflage, construction, and other units and subunits). According to their affiliation, engineer troops are subdivided into the organic category, in which case they are a component part of ground force formations and units, or into one of the following categories: army, front, Supreme High Command Reserve, Navy, Air, or one of the other Services of the Armed Forces.

INZHENERNOYE OBESPECHENIYE OPERATSII (BOYA) (engineer support of an operation [or battle]) -- A type of support for operational and combat activities of troops. It consists in implementing engineer measures for the purpose of creating favorable conditions on the terrain for rapid and covert deployment or concentration of troops, attaining high tempos of attack, and stability

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and aggressiveness in defense, protecting troops against weapons of mass destruction, and combating the enemy by using engineering techniques. Engineer support of an operation (or battle) includes: preparing routes for movement; equipping water-barrier crossings; placing and negotiating obstacles; equipping position areas of missile units, positions, areas for defense and for disposition of troops, airfields, points for basing warships, control posts; procuring and purifying water; using camouflage measures, etc.

INZHENERNYYE BOYEPRIPASY (engineering munitions) -- A component part of engineer armament, including mines for various purposes and of various types, explosives and the means of detonating them (detonators, fuzes, electrical firing units of all types, etc.), used for mine obstacles, explosive obstacles, destruction, and demolition work.

E. Transportation/Roads

SLUZHBA VOYENNYKH SOOBSHCHENIY (VOSO) (military transportation service) -- Elements of the Armed Forces intended: (a) to plan movements of troops and military cargo in peacetime and wartime, and to direct them within the limits of the country and theaters of hostilities; (b) to train troops in effecting such movements by the various modes of transport, in peacetime and wartime; (c) to define and submit to transport ministries and departments, requirements to be met by transport for wartime operation in all types of transportation envisaged in theaters of hostilities.

AVTOMOBIL'NYYE VOYSKA (motor transport troops) -- Special troops intended to transport troops and miscellaneous materiel by motor vehicle. Motor transport troops are organized in units and subunits.

MANEVR MATERIAL'NYMI SREDSTVAMI (logistics operation) -- Conveyance (or transmission) of materiel from one sector of operations to another. A maneuver with materiel may be effected either along the front, or from depth.

PEREGRUZOCHNYY RAYON (transfer area) -- A place where troops are transferred, or freight reloaded, from one mode of transport to another, or where there is a change in the gauge of a railroad. Transfer areas are prepared ahead of time.

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PEREVOZKI VOYSK (troop transportation) -- The movement of troops from one area to another, using various types of transport. According to its scale and purpose, troop transportation may be subdivided into strategic, operational, and mobilization categories. With regard to the mode of transport used, troop transportation may be classified as rail, road, sea, air, or combined. The basic requirements to be met by troop transportation are the timely arrival of the troops in the new area, their full combat readiness in transit, secrecy of movements, and the ability of the troops to repulse any enemy attack during the move.

SNABZHENCHESKIYE PEREVOZKI (supply movements) -- Shifting materiel reserves, intended to satisfy the requirements of the armed forces, from one area to another by all means of contemporary transport.

DOROZHNAYA SET' (road network) -- The system of interconnected railroads, paved roads, and unpaved roads in existence or under construction in a particular area of terrain. The development of a road network in a specific region or theater of hostilities is defined by the road density, i.e., the average of the total lengths of each type of road per hundred square kilometers.

AVTOMOBIL'NAYA DOROGA FRONTA (ARMII) (front [army] motor road) -- A surfaced or dirt road intended for troop movements, transport of materiel, and evacuation. Front (army) motor roads are subdivided into the main and auxiliary categories. They are serviced by road repair and traffic control troops.

FRONTAL'NAYA DOROGA (frontal road) -- A road running in the direction from the rear to the front line.

VOYENNO-AVTOMOBIL'NAYA DOROGA (military highway) -- A road serviced by road repair and traffic control troops and intended for moving troops and supplies, and evacuations of all types. According to their purpose and standard of servicing, military highways are subdivided into main and secondary.

ROKADA (lateral road) -- A railroad, paved highway, or dirt road, running parallel to the front line. Lateral roads are necessary for regrouping and moving troops in an operation (or battle), for materiel and technical supply purposes, and for getting from one frontal route to another when bypassing areas of devastation, and radioactive contamination.

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DOROZHNYYE VOYSKA (highway troops) -- Special troops used for the restoration, repair, construction, and operation of highways, and also for carrying out area road traffic control service. Highway troops consist of individual formations and units of area road traffic control troops, road-building troops, and bridge-building troops.

DOROZHNO-KOMENDANTSKAYA SLUZHBA (area road traffic control service) -- A system of measures adopted by personnel of area road traffic control units and formations on highways for the following purposes: organization of dispatcher control of troop and supply movements; regulation of traffic; defense, security, and protection of highway objectives; maintenance of military order; and organization of servicing points.

DOROZHNO-KOMENDANTSKAYA POLOSA (area road traffic control zone) -- A zone of terrain assigned within definite boundaries for convenience in controlling troop movements, moving freight, and implementing various measures pertaining to highway support. An area road traffic control zone is divided, in turn, into area road traffic control regions and sectors. As a rule, area road traffic control zones and sectors are divided in accordance with the offensive sectors of the armies of the first echelon of a front. Their size depends on the number of highways and their condition, on their envisaged traffic intensity, and on the composition of the forces and facilities assigned to highway maintenance.

F. Medical Services/Evacuation

FRONTOVOY EVAKUATSIONNYY PUNKT (FEP) (forward medical and evacuation facility) -- A group of medical treatment and evacuation transport facilities operating, as a rule, in a forward rear services area.

EVAKOPRIYEMNIK (EP) (evacuation receiving station) -- A mobile, field medical facility intended for reception of the wounded, sick, and contaminated, for subsequent evacuation. Evacuation receiving stations are deployed in the vicinity of railroad junctions and highway intersections, and at points of transshipment from one mode of transport to another (ports, river crossings, airfields, railroad stations).

EVAKUATSIONNYY PUNKT (evacuation [clearing] point) -- A grouping of medical treatment and evacuation-transport facilities created to treat and evacuate the sick, wounded, and contaminated.

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PUTI PODVOZA I EVAKUATSII (supply and evacuation routes) -- Roads especially established in the operational rear and troop service areas, suitable for motor vehicles and other forms of transport, used for supplying troop units with materiel, and for evacuating wounded and sick, and equipment that is not needed. Supply and evacuation routes are subdivided into main, controlled, and reserve categories. The number of them depends on the situation, the state of the road network in the rear area, the possibility of maintaining them, and the demand for them.

GOSPITAL'NAYA BAZA FRONTA (front hospital base) -- A group of hospitals having various purposes, unified under the direction of a Front Hospital Base. Each Front Hospital Base may form branches, which deploy sequentially or simultaneously in several regions.

SANITARNYYE POTERI (casualties) -- Military personnel who must be evacuated and treated in medical establishments. Casualties are subdivided into the combat and noncombat categories. To the former belong wounded, shell-shocked, burned, and injured servicemen, and those rendered ineffective as a result of combat injuries; and to the latter, those who have fallen ill, or have sustained traumata, burns, or frostbite not associated with combat activity.

SANITARNAYA AVIATSIYA (medical aviation) -- Aviation intended to evacuate the sick and wounded and to transport medical personnel for the purpose of rendering urgent medical aid to servicemen. Medical aviation consists of individual aviation subunits and units, and organizationally is a part of air force and combined-arms strategic formations.

PUNKT SPETSIAL'NOY OBRABOTKI (PUSO) (special decontamination point) -- A point set up by subunits of chemical troops in order to carry out complete sanitary decontamination of personnel, as well as radioactive and chemical decontamination and disinfection of armament, combat materiel, and transport.

SANITARNAYA OBRABOTKA (decontamination) -- The removal of radioactive substances from personnel, and rendering harmless and eliminating toxic and bacterial agents. Decontamination may be partial or complete.

DEGAZATSIYA (decontamination) -- Eliminating toxic agents or rendering them harmless. Decontamination may

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be accomplished by chemical, physical, and mechanical methods.

G. Air Force

AVIATSIYA VOYSK PVO STRANY (National Air Defense Aviation) -- One of the main branches of the National Air Defense Forces. It consists of fighter-aviation units, which form part of air defense groupings and formations. National Air Defense Aviation also includes subunits and units of auxiliary aviation and special-purpose aviation (transport, liaison, reconnaissance).

VOYENNO-TRANSPORTNAYA AVIATSIYA (military transport aviation) -- The element of aviation intended for airborne assault landing operations; for transporting troops and combat materiel; for delivering armament and materiel to troops and bases; and for evacuating sick and wounded personnel.

SANITARNAYA AVIATSIYA (medical aviation) -- Aviation intended to evacuate the sick and wounded and to transport medical personnel for the purpose of rendering urgent medical aid to servicemen. Medical aviation consists of individual aviation subunits and units, and organizationally is a part of air force and combined-arms startegic formations.

INZHENERNO-AVIATSIONNAYA SLUZHBA (IAS) (Aviation Engineering Service) -- A special service intended to provide aviation engineering support for the combat operations and combat training of aviation units and formations of the air force.

VOZDUSHNAYA ARMIYA (air army) -- A major formation of aviation, consisting of aviation formations and units, and also of support and servicing units and establishments. An air army is intended for joint combat operations with various Services of the armed forces.

H. Airfield Services/Support

AERODROM MANEVRA (maneuver airfield) -- An airfield on which units of frontal aviation, long-range aviation and national air defense fighter aviation may be based briefly, and from which they may engage in combat operations. From the engineering viewpoint, a maneuver airfield is developed to the same extent as a home airfield. At a maneuver airfield there are radio facilities and an air technical subunit or unit. A

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maneuver airfield is in constant readiness to receive an aviation unit or subunit that is performing an airfield maneuver, and to support its uninterrupted conduct of combat activities. Maneuver airfields may be especially prepared as such, or they may be reserve airfields or those formerly used as home airfields for aviation units and subunits.

OSNOVNOY AERODROM (main airfield) -- An airfield having works and equipment of the capital type, a surfaced runway, taxiing strips, and aircraft parking areas. The purpose of a main airfield is to act as a base for aviation units, and as a site for flight training schools and academies in both peacetime and wartime.

AERODROM BAZIROVANIYA (home airfield) -- An airfield on which, at a given time, an aviation unit is based. Home airfields may be permanent, or in the field category.

PEREDOVOY AERODROM (advanced airfield) -- An airfield located closest to the front or to the state border. An advanced airfield may be used as a base for aviation or as an alternate airfield.

AERODROM PODSKOKA (staging airfield) -- An airfield situated nearer to the enemy than major home airfields, used by the air force to increase the depth to which enemy territory may be penetrated for the purpose of reaching objectives. Home and maneuver airfields of other aviation formations, and specially-prepared airfields may be used as staging airfields.

AERODROM MATERIAL'NOGO OBESPECHENIYA (supply and support airfield) -- An airfield used for consignment of goods by air transport. As a rule, there are warehouses (specialized groups of warehouses) and medical establishments near a supply and support airfield.

AERODROMNAYA SLUZHBA (airfield service) -- An air force service engaged in the siting, construction, reconstruction, repair and operation of airfields. The airfield service is entrusted with providing engineering and airfield support for combat operations conducted by frontal aviation, long-range aviation, missile-armed naval aviation, and national air defense fighter aviation.

AVIATSIONNO-TEKHNICHESKAYA DIVIZIYA (air-technical division) -- A unit that provides airfield technical

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services, materiel and medical support, for air formations and units. In individual cases, an air technical division may be tasked with siting, building and reconstructing airfields, and related research.

AVIATSIONNO-TEKHNICHESKAYA BAZA (air-technical base) -- A unit which supports air units with all types of supplies on one or several airfields.

LETNYY RESURS (sortie rate) -- The number of sorties of a strategic formation (formation, unit) which may be planned for (or assigned to) an operation or combat mission, expressed in army sorties, division sorties, regimental sorties, or individual aircraft sorties.

AVIATSIONNAYA PODDERZHKA (air support) -- Air force combat operations conducted for the purpose of helping ground forces to achieve success in battle (in an operation). Air support is provided by the centralized forces and facilities of fighter-bombers, bombers, and winged missiles with a view to annihilating the enemy's nuclear-attack facilities, his nearest reserves and command posts detected by reconnaissance, as well as important objectives on the field of battle which for some reason cannot be destroyed by unit weapons on the ground. In an attack, air support begins when our own troops go over to the attack, and in defense, when the enemy troops begin their attack, and it continues throughout the entire period of combat operations.

AVIATSIONNOYE VOORUZHENIYE (air armament) -- Weapons mounted on combat aircraft and other airborne platforms. Aircraft armament is subdivided into missile, gun, bombardment and special categories. Missile armament includes unguided and guided missiles, and also devices on the aircraft for their suspension, firing and guidance. Air gun armament consists of cannon, machine guns, ammunition for them, mountings and sights. In the bombardment category are the various types of aerial bombs, torpedoes and mines, as well as devices for their suspension and release from the aircraft (bomb racks, bomb release mechanisms). Special armament includes electronic and pyrotechnic equipment, training and monitoring instrumentation.

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